



PECO ENERGY

PECO Energy Company
Nuclear Group Headquarters
965 Chesterbrook Boulevard
Wayne, PA 19087-5691

September 26, 1994

Docket Nos. 50-277

50-278

License Nos. DPR-44

DPR-56

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Subject: Peach Bottom Atomic Power Station, Units 2 and 3
Technical Specifications Change Request 90-03

Dear Sir:

PECO Energy Company hereby submits Technical Specifications Change Request (TSCR) No. 90-03, in accordance with 10CFR50.90, requesting changes to Appendix A of the Peach Bottom Facility Operating Licenses. The proposed TS changes extend surveillance test intervals and allowable out-of-service times for the testing and/or repair of instrumentation that actuate the Reactor Protection System, Primary Containment Isolation, Core and Containment Cooling systems, Control Rod Blocks, Radiation Monitoring systems, and Alternate Rod Insertion/Recirculation Pump Trip. The proposed TS changes implement recommendations resulting from a generic analysis of BWR actuation instrumentation using the BWR Owners' Group TS Improvement Methodology. PECO Energy requests that the effective date of this TSCR be determined later, based on consideration of PECO Energy completion of the procedure revisions required for implementation of this TSCR.

Enclosed is a document with information supporting the proposed changes. Attachments 1 and 2 to this enclosure were prepared by the General Electric Company and contain proprietary information that should be withheld from public disclosure, as requested in affidavits included with each attachment.

If you have any questions regarding this matter, please contact us.

Very truly yours,

G. A. Hunger, Jr.
Director - Licensing

Enclosures: Affidavit, Supporting Information w/ Attachments

cc: T. T. Martin, Administrator, Region I, USNRC (w/ enclosures)
W. L. Schmidt, USNRC Senior Resident Inspector, PBAPS (w/ enclosures)
R. R. Janati, Commonwealth of Pennsylvania (w/ enclosures)

9410060172 940926
PDR ADDCK 05000277
P PDR

Change: NEC RDR

*Let Encl.
1 INP*

APD

COMMONWEALTH OF PENNSYLVANIA

:

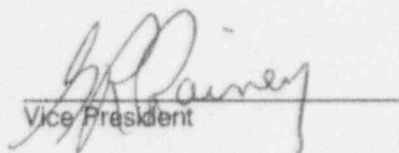
ss.

COUNTY OF CHESTER

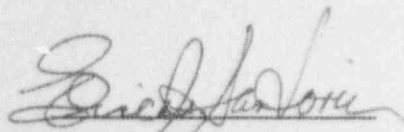
:

G. R. Rainey, being first duly sworn, deposes and says:

That he is Vice President of PECO Energy Company; the Applicant herein; that he has read the attached Technical Specifications Change Request (Number 90-03) for Peach Bottom Facility Operating Licenses DPR-44 and DPR-56, and knows the contents thereof; and that the statements and matters set forth therein are true and correct to the best of his knowledge, information, and belief.


Vice President

Subscribed and sworn to
before me this 26th day
of September 1994.


Notary Public

Notarial Seal
Erica A. Santori, Notary Public
Tredyffrin Twp., Chester County
My Commission Expires July 10, 1995

General Electric Company

AFFIDAVIT

I, Robert C. Mitchell, being duly sworn, depose and state as follows:

- (1) I am Project Manager, Safety and Communications, General Electric Company ("GE") and have been delegated the function of reviewing the information described in paragraph 2 which is sought to be withheld, and have been authorized to apply for its withholding.
- (2) The information sought to be withheld is contained in the GE proprietary report MDE-87-0485-1, *Technical Specification Improvement Analysis for the Reactor Protection System for Peach Bottom Atomic Power Station, Units 2 and 3*, dated October 1987. This information is delineated by brackets around the specific material.
- (3) In making this application for withholding of proprietary information of which it is the owner, GE relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4), 2.790(a)(4), and 2.790(d)(1) for "trade secrets and commercial or financial information obtained from a person and privileged or confidential" (Exemption 4). The material for which exemption from disclosure is here sought is all "confidential commercial information", and some portions also qualify under the narrower definition of "trade secret", within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975F2d871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704F2d1280 (DC Cir. 1983).
- (4) Some examples of categories of information which fit into the definition of proprietary information are:
 - a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by General Electric's competitors without license from General Electric constitutes a competitive economic advantage over other companies;
 - b. Information which, if used by a competitor, would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product;
 - c. Information which reveals cost or price information, production capacities, budget levels, or commercial strategies of General Electric, its customers, or its suppliers;
 - d. Information which reveals aspects of past, present, or future General Electric customer-funded development plans and programs, of potential commercial value to General Electric;

- e. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection.

The information sought to be withheld is considered to be proprietary for the reasons set forth in both paragraphs 4.b and 4.d, above.

- (5) The information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by GE, and is in fact so held. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in (6) and (7) following. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by GE, no public disclosure has been made, and it is not available in public sources. All disclosures to third parties including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence.
- (6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge. Access to such documents within GE is limited on a "need to know" basis.
- (7) The procedure for approval of external release of such a document typically requires review by the staff manager, project manager, principal scientist or other equivalent authority, by the manager of the cognizant marketing function (or his delegate), and by the Legal Operation, for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside GE are limited to regulatory bodies, customers, and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary agreements.
- (8) The information identified in paragraph (2) is classified as proprietary because it would provide other parties, including competitors, with valuable information regarding the application of reliability based methodology to BWR instrumentation. A substantial effort has been expended by General Electric to develop this information in support of the BWR Owners' Group Technical Specifications Improvement Program.
- (9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GE's competitive position and foreclose or reduce the availability of profit-making opportunities. The information is part of GE's comprehensive BWR technology base, and its commercial value extends beyond the original development cost. The value of the technology base goes beyond the extensive physical database and analytical methodology and includes development of the expertise to determine and apply the appropriate evaluation process. In addition, the technology base includes the value derived from providing analyses done with NRC-approved methods.

The research, development, engineering, analytical, and NRC review costs comprise a substantial investment of time and money by GE.

The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

GE's competitive advantage will be lost if its competitors are able to use the results of the GE experience to normalize or verify their own process or if they are able to claim an equivalent standing by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to GE would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall, and deprive GE of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing these very valuable analytical tools.

STATE OF CALIFORNIA)
COUNTY OF SANTA CLARA) ss:

Robert C. Mitchell, being duly sworn, deposes and says:

That he has read the foregoing affidavit and the matters stated therein are true and correct to the best of his knowledge, information, and belief.

Executed at San Jose, California, this 3RD day of JUNE 1993.

Robert C. Mitchell
Robert C. Mitchell
General Electric Company

Subscribed and sworn before me this 3rd day of June 1993.



Mary L. Kendall
Notary Public, State of California

General Electric Company

AFFIDAVIT

I, Robert C. Mitchell, being duly sworn, depose and state as follows:

- (1) I am Project Manager, Safety and Communications, General Electric Company ("GE") and have been delegated the function of reviewing the information described in paragraph 2 which is sought to be withheld, and have been authorized to apply for its withholding.
- (2) The information sought to be withheld is contained in the GE proprietary report RE-020, *Technical Specification Improvement Analysis for the Emergency Core Cooling System Actuation Instrumentation for Peach Bottom Atomic Power Station, Units 2 and 3*, dated December 1986. This information is delineated by brackets around the specific material.
- (3) In making this application for withholding of proprietary information of which it is the owner, GE relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4), 2.790(a)(4), and 2.790(d)(1) for "trade secrets and commercial or financial information obtained from a person and privileged or confidential" (Exemption 4). The material for which exemption from disclosure is here sought is all "confidential commercial information", and some portions also qualify under the narrower definition of "trade secret", within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975F2d871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704F2d1280 (DC Cir. 1983).
- (4) Some examples of categories of information which fit into the definition of proprietary information are:
 - a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by General Electric's competitors without license from General Electric constitutes a competitive economic advantage over other companies;
 - b. Information which, if used by a competitor, would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product;
 - c. Information which reveals cost or price information, production capacities, budget levels, or commercial strategies of General Electric, its customers, or its suppliers;
 - d. Information which reveals aspects of past, present, or future General Electric customer-funded development plans and programs, of potential commercial value to General Electric;

- e. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection.

The information sought to be withheld is considered to be proprietary for the reasons set forth in both paragraphs 4.b and 4.d, above.

- (5) The information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by GE, and is in fact so held. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in (6) and (7) following. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by GE, no public disclosure has been made, and it is not available in public sources. All disclosures to third parties including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence.
- (6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge. Access to such documents within GE is limited on a "need to know" basis.
- (7) The procedure for approval of external release of such a document typically requires review by the staff manager, project manager, principal scientist or other equivalent authority, by the manager of the cognizant marketing function (or his delegate), and by the Legal Operation, for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside GE are limited to regulatory bodies, customers, and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary agreements.
- (8) The information identified in paragraph (2) is classified as proprietary because it would provide other parties, including competitors, with valuable information regarding the application of reliability based methodology to BWR instrumentation. A substantial effort has been expended by General Electric to develop this information in support of the BWR Owners' Group Technical Specifications Improvement Program.
- (9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GE's competitive position and foreclose or reduce the availability of profit-making opportunities. The information is part of GE's comprehensive BWR technology base, and its commercial value extends beyond the original development cost. The value of the technology base goes beyond the extensive physical database and analytical methodology and includes development of the expertise to determine and apply the appropriate evaluation process. In addition, the technology base includes the value derived from providing analyses done with NRC-approved methods.

The research, development, engineering, analytical, and NRC review costs comprise a substantial investment of time and money by GE.

The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

GE's competitive advantage will be lost if its competitors are able to use the results of the GE experience to normalize or verify their own process or if they are able to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to GE would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall, and deprive GE of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing these very valuable analytical tools.

STATE OF CALIFORNIA)
COUNTY OF SANTA CLARA) ss:

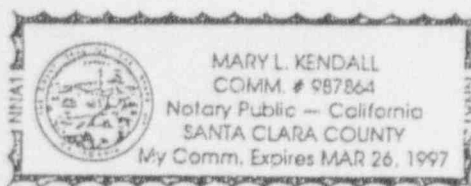
Robert C. Mitchell, being duly sworn, deposes and says:

That he has read the foregoing affidavit and the matters stated therein are true and correct to the best of his knowledge, information, and belief.

Executed at San Jose, California, this 3RD day of JUNE 1993.

Robert C. Mitchell
Robert C. Mitchell
General Electric Company

Subscribed and sworn before me this 3rd day of June 1993.



Mary L. Kendall
Notary Public, State of California

PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 AND 3

Docket Nos. 50-277
50-278

License Nos. DPR-44
DPR-56

TECHNICAL SPECIFICATIONS CHANGE REQUEST 90-03

"Extending Instrumentation AOTs and STIs
Based on Licensing Topical Reports"

Supporting Information for Changes: 42 Pages

PECO Energy Company (PECO Energy), Licensee under Facility Operating Licenses DPR-44 and DPR-56 for the Peach Bottom Atomic Power Station (PBAPS) Unit No. 2 and Unit No. 3, respectively, requests that the Technical Specifications (TS) contained in Appendix A to the Operating Licenses be amended as proposed herein to extend surveillance test intervals (STIs) and allowable out-of-service times (AOTs) for the actuation instrumentation for the following:

| | |
|-----------------------|--|
| TS 3.1.1 | Reactor Protection System; |
| TS 3.2.A | Primary Containment Isolation Functions; |
| TS 3.2.B | Core and Containment Cooling Systems; |
| TS 3.2.C | Control Rod Block Actuation; |
| TS 3.2.D | Radiation Monitoring Systems; |
| TS 3.2.E ¹ | Drywell Leak Detection; |
| TS 3.2.F ¹ | Surveillance Information Readouts; and, |
| TS 3.2.G | Alternate Rod Insertion and Recirculation Pump Trip. |

This TS Change Request (TSCR) provides background information, a description and justification for the proposed changes, safety assessment for each of the proposed TS changes, information supporting a finding of No Significant Hazards Consideration, and information supporting an Environmental Assessment.

Markups of the existing Technical Specifications showing each of the proposed changes and a complete set of re-typed replacement pages for all pages affected by the proposed changes are included as attachments to this TSCR. The re-typed replacement pages identify the proposed changes by vertical bars in the margin of the pages.

A. Background Information:

NRC Generic Letter (GL) 83-28, Item 4.5.3, required an evaluation of the intervals specified in the Technical Specifications for on-line functional testing of the Reactor Protection System (RPS). This evaluation was intended to ensure that the intervals for such testing are consistent with the goal of achieving high RPS availability. To complete this evaluation, the BWR Owners' Group, in conjunction with the General Electric Company (GE), developed a methodology that evaluates the impact on RPS reliability of: uncertainties in component and common mode failure rates; reduced redundancy during testing; operator error during testing; and, component wear caused by testing. The required review of RPS availability using this methodology resulted in an industry response to GL 83-28, Item 4.5.3, and the results of the review are presented in Reference 1.

Development of the response to GL 83-28, Item 4.5.3, resulted in the recognition that improvements in plant safety and availability could be achieved by extending STIs and AOTs associated with actuation instrumentation. To facilitate obtaining NRC approval of the TS changes needed for extending AOTs and STIs, the BWR Owners' Group developed and the NRC subsequently evaluated and approved, a generic analysis for each major category of actuation instrumentation. The methodology and results of the generic analysis for each major type of actuation instrumentation were published as Licensing Topical Reports (References 2 through 8).

¹ Technical Specifications 3.2.D.2, Main Control Room, 3.2.E, Drywell Leak Detection, and 3.2.F, Surveillance Information Readouts, are being moved from pages 59 and 60 to new page 59a in order to support other proposed changes. There are no technical changes to these TS.

Safety Evaluation Reports (SERs), issued by the NRC and subsequently incorporated into each of the Licensing Topical Reports, approved using the generic analyses in References 2 through 8 to justify extending the AOTs and STIs of individual plants provided that each plant:

- a) confirmed the applicability of the generic analyses to the specific plant for the instruments covered by each of the Topical Reports; and,
- b) confirmed, based on the guidance provided in Reference 11, that any increase in instrument drift due to the extended test interval is properly accounted for in the setpoint calculation methodology.

Specific details for incorporating the extended AOTs and STIs into Technical Specifications were provided in each of the topical reports or, in some cases, the SER that approved the topical report. This guidance consisted of examples that incorporated the extended AOTs and STIs into NUREG-0123, Standard Technical Specifications for General Electric Boiling Water Reactors." This guidance was supplemented by Reference 13 which stipulated that actuation capability must be maintained as a condition of extending an AOT in order to prevent extended AOTs from causing an extended loss of actuation capability.

Subsequent to the issuance of References 2 through 8, NUREG-0123, was superseded by NUREG-1433, "Standard Technical Specifications for General Electric Plants, BWR/4." NUREG-1433 incorporates all of the requirements established in References 2 through 8 and includes the subsequent requirements to prohibit the extended AOTs from resulting in an extended loss of function. Additionally, the format and wording of NUREG-1433 (Reference 12) were selected to improve the clarity and useability of the Technical Specifications. Therefore, incorporation of the extended STIs and AOTs into PBAPS Technical Specifications is based on the guidance provided in NUREG-1433.

B. Description and Justification for the Proposed Changes:

The proposed TS changes implement recommendations resulting from a generic analysis of BWR actuation instrumentation using the BWR Owners' Group Technical Specification Improvement Methodology. This methodology and the results of the analyses are described in Licensing Topical Reports issued by the General Electric Company (References 2 through 8).

The analyses in References 2 through 8 made assumptions about the required actions and the associated completion times when an instrument channel was inoperable. There are differences between the required actions and completion times in the BWR Standard Technical Specifications (Reference 12) and the PBAPS custom Technical Specifications. Therefore, each of the proposed changes is being incorporated into the PBAPS custom Technical Specifications using the same approach and specific requirements used in NUREG-1433 to ensure that PBAPS conformed to the assumptions used in References 2 through 8 (including actions that prevent an extended loss of instrument function resulting from the extended AOT); to facilitate NRC review and approval of the proposed changes; and to support the pending PBAPS conversion to Improved Technical Specifications.

The proposed changes to the PBAPS Technical Specifications fall into three categories.

- a. Changes to the minimum surveillance test intervals and maximum allowable out-of-service times for the testing and/or repair of instrumentation. These changes are based on and justified by the results of generic analyses in References 2 through 8.
- b. Changes to conditions, required actions, and completion times needed to make PBAPS TS requirements for instrumentation consistent with the assumptions used in the analyses in References 2 through 8. Additional changes to conditions, required actions, and completion times needed to make PBAPS custom TS requirements for instrumentation consistent with BWR Standard Technical Specifications to the extent necessary to facilitate changes to AOTs and STIs are also included in the proposed changes.
- c. Changes that reformat, renumber, and/or reword existing requirements to incorporate the changes described above into the PBAPS custom Technical Specifications. These changes are also consistent with and use the same approach and specific requirements used in Reference 12. The reformatting, renumbering, and rewording resulted in no technical changes (either actual or interpretational) to the Technical Specifications except where specifically discussed in this TSCR. Each significant reformatting, renumbering, or rewording change is also described in Section C.

As discussed in Section A of this TSCR, Safety Evaluation Reports, issued by the NRC and subsequently incorporated into each of the Licensing Topical Reports, approved using the generic analyses in References 2 through 8 to justify extending the AOTs and STIs of individual plants provided that each plant:

- a) confirms the applicability of the generic analyses to the specific plant for the instruments covered by each of the Topical Reports; and,
- b) confirms, based on the guidance provided in Reference 11, that any increase in instrument drift due to the extended test interval is properly accounted for in the setpoint calculation methodology.

PECO Energy used its administrative program for the performance of 10CFR50.59 Safety Evaluations as the mechanism for ensuring these requirements were properly satisfied. This process verified the applicability of each of the Licensing Topical Reports to PBAPS by performing a review of the PBAPS specific evaluations of applicability in References 9 and 10 prepared by GE at the time the Licensing Topical Reports were issued. This evaluation verified that: a) design information used in the preparation of the GE evaluations was correct and appropriate; b) PBAPS design changes implemented since the completion of the GE evaluations do not invalidate the conclusions; and, c) the results of the Licensing Topical Reports and the GE evaluations of applicability are reasonable for PBAPS. Additionally, a systematic review of each of the Licensing Topical Reports (References 2 through 8) was performed to ensure that PBAPS instrumentation conformed to the assumptions used in the analyses supporting the Licensing Topical Reports. Specific differences between PBAPS and the assumptions used in the Licensing Topical Reports are described and dispositioned in Section C.

In addition to verifying the applicability of the Licensing Topical Reports to PBAPS, the PECO Energy evaluation concluded that AOT and STI extensions were justified for PBAPS instrumentation not specifically addressed but similar to instrumentation in the Licensing Topical Reports. The Low Pressure Coolant Injection (LPCI) System Bus Power Monitor, Core Spray System Bus Power Monitor, Automatic Depressurization System (ADS) System Bus Power Monitor, High Pressure Coolant Injection (HPCI) System Bus Power Monitor, and, Reactor Core Isolation Cooling (RCIC) System Bus Power Monitor have an indication only function and are included in Reference 3 but only for the BWR 5 analyses. The Core Spray Sparger to Reactor Pressure Vessel d/p and LPCI Cross-Connect position indication are also indication only functions. AOT and STI extensions are justified for these instruments because the redundancy in this instrumentation is either comparable to or more extensive than the redundancy of the instrumentation analyzed in the Licensing Topical Reports. In addition, loss of the function for this indication only instrumentation has a less significant impact on plant safety than loss of an RPS or Emergency Core Cooling System (ECCS) function.

Similarly, the Reactor Low Pressure instrumentation ($50 \leq P \leq 75$ psig), Core Spray Pump Start Timers, LPCI Pump Start Timers, HPCI Turbine High Flow Time Delays, and RCIC Turbine High Flow Time Delays are not specifically addressed in References 2 through 8. PECO Energy determined that AOT and STI extensions are justified for these instruments because: the redundancy in this instrumentation is either more extensive or comparable to the redundancy of instrumentation analyzed in the Licensing Topical Reports; and, the instrumentation used for these functions is either the same or similar instrumentation to that analyzed in previous analyses. The primary difference is the function performed by the actuation instrumentation, which is not considered in the analyses in References 2 through 8. This approach for justifying AOT and STI extensions for instruments not specifically addressed in the Licensing Topical Reports is consistent with the approach used in References 7 and 8.

The 10CFR50.59 Safety Evaluation supporting the proposed changes also verified that the proposed changes will not have any effect on the timeliness of the identification and/or correction of instrument setpoint errors resulting from drift. The bases for this conclusion is the STI that will be extended are for the performance of Instrument Channel Functional Tests. Instrument calibration frequencies are not affected. Instrument Channel Functional Tests are defined in the PBAPS Technical Specifications as "the injection of a simulated signal into the channel to verify its proper response including, where applicable, alarm and/or initiating action." During the performance of instrument channel functional tests, the instrument functions; e.g., alarms and/or trips, are verified but instrument setpoints are not verified. Instrument setpoints are verified during Instrument Channel Calibrations which are required by Technical Specifications to be performed at a specified frequency, typically quarterly. PBAPS instrument setpoints are established based on the calibration interval required by PBAPS Technical Specifications and are not dependent on the assumption that the setpoint will be verified between required calibrations.

Although verification that instrument setpoints are within TS limits is not performed during Channel Functional Tests at PBAPS as was assumed in the SERs for References 2 through 8, verification that instrument setpoints are within limits is performed during Instrument Channel Calibrations which are typically performed quarterly at PBAPS, instead of at each refueling outage as was assumed in the SERs for References 2 through 8. The proposed changes do not make any changes to the frequency for performing Instrument Channel Calibration surveillance tests.

Based on the above, PECO Energy has confirmed that each of the Licensing Topical Reports (References 2 through 8) is applicable to PBAPS and that the proposed changes will not have any effect on the timeliness of the identification and/or correction of instrument setpoint errors resulting from drift.

C. Safety Assessment for Proposed Changes

C.1. Reactor Protection System (TS 3.1)

The changes proposed for PBAPS TS Section 3.1, Reactor Protection System, are shown in Attachment 3 and described below.

- a. Proposed Limiting Conditions for Operation (LCO) 3.1.A deletes the existing statements of Applicability and the Objective (TS 3/4.1) for the Reactor Protection System instrumentation because these statements, as currently written, do not establish any requirements or provide any information specific to the Reactor Protection System. The proposed changes establish, under appropriate headings, concise and complete statements of the LCO and Applicability that are consistent with NUREG-1433 (Reference 12). Specific changes include:
 - i. The proposed Applicability statement requires RPS instrumentation to be Operable as required by Table 3.1.1, just as the existing TS require; but, eliminates statements concerning fuel in the vessel and the position of the reactor mode switch because these requirements are redundant to the requirements in Table 3.1.1 which specify the Mode in which each RPS function is required to be Operable.
 - ii. The proposed LCO 3.1.A clarifies the existing LCO requirement concerning the number of required trip systems by relocating, from Note 1 of Table 3.1.1 to the LCO statement, the existing requirement that there shall be two Operable or tripped trip systems for each RPS Trip Function in Table 3.1.1.
 - iii. Proposed LCO 3.1.A is expanded to incorporate existing TS Section 3.1.B requirements governing RPS response time. The existing TS Section governing RPS response time testing, 3.1.B, will be marked N/A and be placed opposite existing TS Section 4.1.B. This change establishes consistent numbering between an LCO and its corresponding Surveillance Requirements.
 - iv. The requirement in existing TS Section 3.1.B that failure to meet the response time requirements requires initiation of actions listed in Table 3.1.1 was not retained in proposed LCO 3.1.A because, in all cases, failure to meet an LCO requires initiation of the required actions.
 - v. The Surveillance Requirement for response time testing was relocated from Table 4.1.2, Note 4, to TS Section 4.1.A so that the Surveillance Requirement is located symmetrically to the corresponding LCO requirement.

Each of the changes listed above is an administrative change because there are no technical changes (either actual or interpretational) to the Technical Specifications. These changes improve clarity and/or establish the numbering and format necessary to support technical changes discussed elsewhere. These changes are consistent with Reference 12.

- b. Proposed LCO 3.1.A contains a new heading, "Conditions and Required Actions." Existing LCO 3.1.A specifies entry into Note 1 as soon as an RPS channel is determined to be inoperable. The proposed change will extend AOTs for RPS instrument channels by inserting required actions and completion times that are consistent with Reference 12, Section 3.3.1.1, Reactor Protection System Instrumentation, Conditions A, B, C, and D. To implement this change, the conditions and required actions currently located in Table 3.1.1, Note 1, were moved into this section as condition 1 and condition 4. Conditions 2 and 3, which are needed to support the assumptions used in the analysis that justified extending the instrumentation AOTs and STIs, were incorporated into this TS Section. Collectively, the proposed conditions and required actions satisfy the assumptions and conditions in References 1 and 2. The resulting changes to the existing requirements are described below in Sections C.1.c through C.1.h.
- c. Proposed LCO 3.1.A, Condition 1: The condition description currently in Table 3.1.1, Note 1 was moved into the LCO and modified to clarify that the condition could be simultaneously applied to more than one trip function and more than one trip system within a trip function by changing the wording from "if the minimum number of sensor channels for a trip system cannot be met" to "one or more channel(s) required by Table 3.1.1 inoperable in one or more Trip Functions." This change is consistent with the statement in Reference 12, Section 3.3.1.1, that allows separate condition entry for RPS functions. This is an administrative change that improves clarity because there is no change to the existing interpretation of the requirements.
- d. Proposed LCO 3.1.A, Condition 1: The required action for an inoperable channel currently in Table 3.1.1, Note 1, was changed from "the affected trip system shall be placed in the safe (tripped) condition" to "place the inoperable channel or associated trip system in trip." This is an administrative change that improves clarity because the proposed required action results in the same condition as tripping the channel and there is no change to the existing interpretation of the requirements. This change is consistent with Reference 12.
- e. Proposed LCO 3.1.A, Condition 1: The repair AOT for an inoperable RPS channel currently in Table 3.1.1, Note 1, was extended from immediately (interpreted as within one hour) to within 12 hours. This change is justified based on References 2 and 9. The proposed change is consistent with Reference 12.
- f. Proposed LCO 3.1.A, Condition 2: A new condition, "With one or more Trip Functions with one or more channels required by Table 3.1.1 inoperable in both trip systems," was established. The associated required action is to, within 6 hours, place a channel in one trip system in trip or place one trip system in trip. This change is more restrictive than the requirement in existing LCO 4.1.C which allows an 8 hour AOT in the same situation. This change is required to satisfy assumptions in References 2 and 9. This change is consistent with Reference 12.

- g. Proposed LCO 3.1.A, Condition 3: A new condition and required action, "With one or more automatic trip functions or two or more manual trip functions (Mode Switch in Shutdown, Manual Scram and RPS Channel Test Switches) with RPS trip capability not maintained, restore RPS trip capability within one hour," was established. In conjunction with this change, the RPS Channel Test Switches are being added to Table 3.1.1 as discussed in Section C.1.p of the safety assessment. This new condition and required action is necessary because Reference 2, used to justify extending the AOT (proposed LCO 3.1.A, Condition 1) for an inoperable channel, did not consider that extending the AOT could result in an extended loss of trip capability. This change incorporates the requirements of Reference 13 to prevent the extended AOT from resulting in an extended loss of trip capability and is consistent with Reference 12 except for the proposed requirements governing the manual scram function.

The PBAPS design for the manual scram functions (Manual Scram and Reactor Mode Switch in Shutdown) differs from the generic BWR 4 in that these functions actuate the scram function using instrument channels (Channels A3 and B3) separate from the channels used to actuate the automatic scram functions (Channels A1, A2, B1 and B2). Therefore, testing the manual scram function does not exercise the automatic function scram contactors as was assumed in Reference 2. Reference 9 determined that this difference has no effect on the applicability of References 1 and 2 to PBAPS because "each channel has a test switch which is functionally the same as the manual scram switch in the generic model." Therefore, to satisfy the requirement in Reference 2 that the manual scram function be exercised weekly to demonstrate the operability of the scram contactor associated with the automatic scram function, PBAPS established requirements for weekly Channel Functional Testing of the RPS Channel Test Switches as discussed in Section C.1.s of this safety assessment. Because the operability of the RPS Channel Test Switches is an assumption of Reference 9, the RPS Channel Test Switches were added to Table 3.1.1 in order to establish appropriate operability requirements and appropriate required actions and completion times for an inoperable channel.

As explained above, the difference between PBAPS and the generic BWR 4 requires that PBAPS have TS governing 3 separate manual scram functions in the control room: Mode Switch in Shutdown; Manual Scram; and, the four RPS Channel Test Switches. As indicated in Table 3.1.1, the PBAPS Mode Switch in Shutdown and Manual Scram have only two channels, i.e., one channel per trip system. Therefore, the loss of a single channel of the Manual Scram or the Mode Switch in Shutdown will result in a loss of function at PBAPS but not in the generic BWR 4 which has 4 channels for these manual functions. This difference prevents PBAPS from benefitting from the extended AOT of 12 hours if there is a loss of a single channel of the Manual Scram or the Mode Switch in Shutdown because PBAPS must immediately enter the actions required for a loss of function. Proposed PBAPS TS that will govern loss of trip capability in one of the three manual trip functions (Mode Switch in Shutdown or Manual Scram or RPS Channel Test Switches) will allow 12 hours to restore trip capability for that function as long as trip capability in the other two manual scram functions is maintained. By requiring only two of the three manual scram functions in the control room to maintain trip capability, the proposed PBAPS TS is equivalent to the recommendations in Reference 12 in that it will allow the extended AOT to be applied if there is a loss of a channel in either the Manual Scram or the Mode Switch in Shutdown. PBAPS procedures and operator training will be revised to recognize that RPS Test Switches are an alternate manual scram function

- g. Proposed LCO 3.1.A, Condition 3: A new condition and required action, "With one or more automatic trip functions or two or more manual trip functions (Mode Switch in Shutdown, Manual Scram and RPS Channel Test Switches) with RPS trip capability not maintained, restore RPS trip capability within one hour," was established. In conjunction with this change, the RPS Channel Test Switches are being added to Table 3.1.1 as discussed in Section C.1.p of the safety assessment. This new condition and required action is necessary because Reference 2, used to justify extending the AOT (proposed LCO 3.1.A, Condition 1) for an inoperable channel, did not consider that extending the AOT could result in an extended loss of trip capability. This change incorporates the requirements of Reference 13 to prevent the extended AOT from resulting in an extended loss of trip capability and is consistent with Reference 12 except for the proposed requirements governing the manual scram function.

The PBAPS design for the manual scram functions (Manual Scram and Reactor Mode Switch in Shutdown) differs from the generic BWR 4 in that these functions actuate the scram function using instrument channels (Channels A3 and B3) separate from the channels used to actuate the automatic scram functions (Channels A1, A2, B1 and B2). Therefore, testing the manual scram function does not exercise the automatic function scram contactors as was assumed in Reference 2. Reference 9 determined that this difference has no effect on the applicability of References 1 and 2 to PBAPS because "each channel has a test switch which is functionally the same as the manual scram switch in the generic model." Therefore, to satisfy the requirement in Reference 2 that the manual scram function be exercised weekly to demonstrate the operability of the scram contactor associated with the automatic scram function, PBAPS established requirements for weekly Channel Functional Testing of the RPS Channel Test Switches as discussed in Section C.1.s of this safety assessment. Because the operability of the RPS Channel Test Switches is an assumption of Reference 9, the RPS Channel Test Switches were added to Table 3.1.1 in order to establish appropriate operability requirements and appropriate required actions and completion times for an inoperable channel.

As explained above, the difference between PBAPS and the generic BWR 4 requires that PBAPS have TS governing 3 separate manual scram functions in the control room: Mode Switch in Shutdown; Manual Scram; and, the four RPS Channel Test Switches. As indicated in Table 3.1.1, the PBAPS Mode Switch in Shutdown and Manual Scram have only two channels, i.e., one channel per trip system. Therefore, the loss of a single channel of the Manual Scram or the Mode Switch in Shutdown will result in a loss of function at PBAPS but not in the generic BWR 4 which has 4 channels for these manual functions. This difference prevents PBAPS from benefitting from the extended AOT of 12 hours if there is a loss of a single channel of the Manual Scram or the Mode Switch in Shutdown because PBAPS must immediately enter the actions required for a loss of function. Proposed PBAPS TS that will govern loss of trip capability in one of the three manual trip functions (Mode Switch in Shutdown or Manual Scram or RPS Channel Test Switches) will allow 12 hours to restore trip capability for that function as long as trip capability in the other two manual scram functions is maintained. By requiring only two of the three manual scram functions in the control room to maintain trip capability, the proposed PBAPS TS is equivalent to the recommendations in Reference 12 in that it will allow the extended AOT to be applied if there is a loss of a channel in either the Manual Scram or the Mode Switch in Shutdown. PBAPS procedures and operator training will be revised to recognize that RPS Test Switches are an alternate manual scram function

in the control room. Therefore, the proposed change is equivalent to the requirements for the generic BWR 4 because it ensures that a minimum of two manual scram functions in the Control Room are operable.

- h. Proposed LCO 3.1.A, Condition 4: This change incorporates into the proposed LCO a requirement currently located in Table 3.1.1, Note 1, that specific actions must be performed whenever the required actions and completion times of proposed Actions 1 or 2 or 3 cannot be met. This is an administrative change that improves clarity by establishing a link between the LCO and the associated required actions in the Notes to Table 3.1.1. The required actions specified by proposed Condition 4 are still located in Table 3.1.1 (Note 1, Actions A, B, C and D). This change is consistent with Reference 12.
- i. Proposed LCO 3.1.A, Conditions and Required Actions: Two new notes were added to provide clarification concerning implementation of required actions. The first note will allow initiation of required actions to be delayed for up to 6 hours when a channel is placed in an inoperable status solely for performance of required Surveillances, provided the associated trip function maintains trip capability. This change is more restrictive than the requirement in existing LCO 4.1.C which allows an 8 hour AOT in the same situation. The second note provides clarification that an inoperable channel or trip system need not be placed in the tripped condition where this would cause the Trip Function to occur. In these cases, if the inoperable channel is not restored to Operable status within the required time, the Action required by Table 3.1.1 for that trip Function shall be taken. Both notes are justified based on Reference 2 and are consistent with Reference 12.
- j. Proposed Deletion of existing TS Section 4.1.C: The requirement to perform a functional test on the other RPS channels that monitor the same variable as a failed channel "immediately before the trip system containing the failure is tripped" is deleted because performing a functional test due to one channel being inoperable does not increase the reliability of the other channels. This change acknowledges that: the inoperability of a subsystem is not automatically indicative of a similar condition in the redundant subsystem unless a generic failure is suspected; and, that the periodic frequencies specified to demonstrate Operability have been shown to be adequate to ensure equipment Operability. This change is justified because it: allows credit to be taken for normal periodic Surveillances as a sufficient demonstration of Operability; recognizes that functional capability is maintained by the remaining components and the reduction in redundancy will be of limited duration; reduces unnecessary challenges and wear to redundant components; recognizes that testing of redundant channels does not make those channels more reliable; and, incorporates operating experience and analysis (References 1 and 2) that have demonstrated the normal STI is sufficient to provide a very high degree of reliability of an instrument channel. Additionally, testing of redundant channels following a failure was not an assumption used in References 1 or 2 and is not required by NUREG-0123. This change is consistent with Reference 12.
- k. Proposed Deletion of existing TS Section 4.1.C: The requirement in existing TS Section 4.1.C allowing the trip system containing an unsafe failure to be placed in the untripped condition for a period of up to 8 hours while surveillance testing is being performed on the other RPS channels is superseded by proposed LCO 3.1.A, Condition 2, and proposed LCO 3.1.A, Note 1 to the conditions and required actions (See Sections C.1.f

and C.1.j, above.)). This change is necessary to make AOTs for RPS consistent with the assumptions in References 2 and 9 and the change is consistent with Reference 12.

- l. Reformatting associated with the proposed changes described above allows all of the requirements of TS Sections 3/4.1.D.1 and 3/4.1.D.2 to be placed on page 36. Therefore, the requirements of 3/4.1.D.2 will be moved from page 36a to page 36. Page 36a will be marked "Intentionally Blank." This is an administrative change to improve usability. There are no changes to TS Sections 3/4.1.D.1 and 3/4.1.D.2 except for the deletion of a temporary note discussed below.
- m. The temporary note marked with a double asterisk on existing page 36a is deleted. This note specifies that the requirements of TS Section 3/4.1.D.2 will be "Effective upon installation of the protective trip devices." This note was added as part of Amendment 130, dated April 6, 1988. The referenced protective trip devices were installed during 1988. Therefore, the temporary note is deleted. This is an administrative change.
- n. Proposed change to Table 3.1.1: References to Note 1 in the column headed "Minimum Number of Operable Instruments per Trip System" are deleted because the conditions and required actions associated with inoperable RPS instrument channels are located in proposed LCO 3.1.A, Conditions and Required Actions 1, 2, 3 and 4. The references to Note 1 in the Table 3.1.1 column headed "Action" are retained because this note, in conjunction with proposed LCO 3.1.A, Condition 4, provides direction to the specific action required for individual trip functions when the actions and completion times in proposed TS Section 3.1.A cannot be satisfied. This is an administrative change necessary to support the changes to LCO 3.1.A discussed above.
- o. Proposed change to Table 3.1.1, Note 1: The existing requirement in Table 3.1.1, Note 1, "There shall be two operable or tripped trip systems for each function." was relocated to proposed LCO 3.1.A as discussed in paragraph C.1.a.ii, above. The conditions and required actions specified in Table 3.1.1, Note 1, were superseded by proposed LCO 3.1.A, Conditions 1, 2, 3 and 4, as described in paragraphs C.1.b through C.1.j, above. Table 3.1.1, Note 1, which describes the conditions and required actions "if the minimum number of operable sensor channels for a trip system cannot be met" was reworded to be consistent with proposed LCO 3.1.A, Condition 4. This is an administrative change necessary to support the other changes described above.
- p. Proposed change to Table 3.1.1: The proposed change adds the RPS Channel Test switches to Table 3.1.1 to support the changes described in Section C.1.g above. The RPS Channel Test switches were added to Table 3.1.1 as Item 18. This function is identified as having 4 instrument channels with 2 channels required per trip system. The requirements for operability and the required actions for an inoperable channel are the same as those currently required for the Manual Scram and the Mode Switch in Shutdown. This change establishes operability requirements and required actions and completion times for the RPS Channel Test switches to satisfy assumptions used in Reference 9.
- q. Proposed change to Table 3.1.1: The proposed change increases the number of required Main Steam Line (MSL) Isolation valve closure channels per trip system from 4 to 8 and increases the number of channels provided by design from 8 to 16 channels. PBAPS, like the generic BWR 4, has eight main steam line isolation valves with 2 valve

stem position switches (one associated with each trip system) for each valve. Existing PBAPS Table 3.1.1 uses the convention used in NUREG-0123 and describes this configuration as 8 channels with 4 channels per trip system. The proposed change adopts the convention used in Reference 12 and defines this configuration as 16 channels (i.e., the number of switches) with 8 channels per trip system. This is an administrative change which ensures that the proposed changes to LCO 3.1.A are implemented consistent with Reference 12.

- r. Proposed change to Table 4.1.1: The minimum frequency specified for the performance of Instrument Channel Functional Tests is extended from once per month (or once per week for APRM trip Functions and Main Steam Line Isolation Valve Closure Trip) to once every 3 months for the following instruments: APRM High Flux; APRM Inoperative; APRM Downscale; APRM Flow Bias; High Reactor Pressure; High Drywell Pressure; Reactor Low Water Level; High Water Level in Scram Discharge Volume; Turbine Condenser Low Vacuum; MSL High Radiation; MSL Isolation Valve Closure; Turbine Control Valve EHC Oil Pressure; and, Turbine Stop Valve Closure. This change is justified by the analyses in References 1 and 2 and the change is consistent with Reference 12.
- s. Proposed change to Table 4.1.1: The minimum frequency specified for the performance of Instrument Channel Functional Tests for the RPS Channel Test Switches is increased from "every refueling outage or after channel maintenance" to "once per week or after channel maintenance." This more restrictive change is an assumption in Reference 2 and a prerequisite for extending RPS AOTs and STIs (See Sections C.1.g and C.1.p of this safety assessment). The analysis in Reference 2 determined that RPS failure was insensitive to changes in instrument channel failure rates but was highly sensitive to common cause failures of the scram contactors and/or operator error during testing. The existing monthly channel functional tests of each RPS function provided frequent opportunity to identify and correct these failures in a timely manner. Extending the functional test frequency from monthly to quarterly reduced the opportunity to identify and correct the more common type of failure. Therefore, the test frequency of the RPS manual scram function was increased to weekly to compensate for the decreased testing of the scram contactors resulting from the less frequent testing of individual scram functions. The increased testing frequency for the manual scram function is a prerequisite in the Reference 2 analysis for extending AOTs and STIs. However, Reference 9 (Section 3, Assessed Reliability Effect of RPS Configuration Differences) determined that design of the manual scram function at PBAPS differs from the design of the manual scram function in the generic model because scram channels cannot be tripped individually. Reference 9 determined that this difference has no effect on the applicability of References 1 and 2 to PBAPS because "each channel has a test switch which is functionally the same as the manual scram switch in the generic model." Reference 9 also determined that "the manual scram on separate channels is functionally the same as the manual scram circuit in the generic model." Therefore, the proposed change maintains the Functional Test frequency for the manual scram function at "Every 3 months" but increases the frequency for the Functional Test of the RPS Channel Test Switches from "every refueling outage or after channel maintenance" to "once per week or after channel maintenance." The change satisfies the requirements of Reference 2 for weekly testing of scram contactors.

- t. Proposed change to Table 4.1.1: Note 1 to Table 4.1.1 and References to Note 1 on Table 4.1.1 were deleted. Note 1 states that frequency of performance for functional tests is "Initially once every month" but that the frequency could be changed based on failure rate data if the proposed change and supporting failure rate data was reviewed and approved by the NRC. References 1, 2 and 9 constitute the review and approval of failure rate data and provide the justification for extending the functional test interval from once per month to once every 3 months. The requirements that Note 1 identifies for extending the RPS functional test frequency beyond the currently existing interval are satisfied by this TSCR; therefore, Note 1 is no longer applicable. Deletion of Note 1 to Table 4.1.1 is an administrative change.
- u. Table 3.1.1, Note 1, Action A: The existing action requires initiation of the insertion of Operable control rods and completion of this within 4 hours whenever the trip system cannot be placed in trip within the required completion time for the applicable functions. The proposed change will require completion of insertion within 12 hours. This is equivalent to the NUREG-1433, TS 3.3.1.1, Condition G, requirement to be in Mode 3 within 12 hours under the same conditions. The allowed Completion Time of 12 hours is reasonable, based on operating experience, to reach the specified condition from full power conditions in an orderly manner and without challenging plant systems. This change is consistent with Reference 12.
- v. Table 3.1.1, Note 1, Action B: The proposed change decreases the time allowed to reduce power level to the Intermediate Range Monitor (IRM) range and place mode switch in the startup position (i.e., bring the plant to MODE 2) from 8 hours to 6 hours. The proposed change is equivalent to the NUREG-1433, TS 3.3.1.1, Condition F, requirement to be in Mode 2 within 6 hours under the same conditions. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach the specified condition from full power conditions in an orderly manner and without challenging plant systems. This change is consistent with Reference 12.
- w. Table 3.1.1, Note 1, Action C: The proposed change decreases the time allowed to reduce power level and close the Main Steam Isolation Valves (MSIVs) from 8 hours to 6 hours. The proposed change is equivalent to the NUREG-1433, TS 3.3.1.1, Condition F, requirement to be in Mode 2 within 6 hours under the same conditions. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach the specified condition from full power conditions in an orderly manner and without challenging plant systems. This change is consistent with Reference 12.
- x. Table 3.1.1, Note 1, Action D: The proposed change establishes 4 hours as the time allowed to reduce power level to less than 30% whereas no time limit is currently specified. This change eliminates an existing ambiguity. The proposed change is equivalent to the NUREG-1433, TS 3.3.1.1, Condition E, requirement to reduce power within 4 hours under the same conditions. The allowed Completion Time of 4 hours is reasonable, based on operating experience, to reach the specified condition from full power conditions in an orderly manner and without challenging plant systems. This change is consistent with Reference 12.
- y. The Bases for TS Section 3/4.1.A were revised as shown in Attachment 10 to reflect the changes discussed above or to correct typographical errors.

C.2. Primary Containment Isolation Functions (TS 3.2.A)

The changes proposed for PBAPS TS Section 3.2.A, Primary Containment Isolation Functions, are shown in Attachment 4 and described below.

- a. The proposed change deletes the existing statements of Applicability and Objective for Section 3.2, Protective Instrumentation (TS 3/4.2), because these statements, as currently written, do not establish any requirements. The proposed change establishes for each separate category of protective instrumentation, concise and complete statements of the LCO and Applicability which are consistent with Reference 12. For TS Section 3.2.A, the LCO and Applicability were established as follows:
 - i. The proposed change separates existing LCO 3.2.A into separate statements for the LCO and the Applicability under appropriate headings with no technical changes.
 - ii. Proposed LCO 3.2.A clarifies the existing LCO requirement concerning the number of required trip systems by relocating, from Table 3.2.A, Note 1, an existing requirement that there shall be two Operable or tripped trip systems for each Primary Containment Isolation (PCI) Function in Table 3.2.A.

Each of the changes listed above is an administrative change because there are no technical changes (either actual or interpretational) to the Technical Specifications. These changes improve clarity and/or establish the numbering and format necessary to support technical changes discussed elsewhere. These changes are consistent with Reference 12.

- b. Proposed LCO 3.2.A contains a new heading, "Conditions and Required Actions." The conditions resulting from an inoperable instrument channel, the associated required actions and the completion times, currently in Table 3.2.A, Note 2, were incorporated as TS Sections 3.2.A.1 through 3.2.A.3. These conditions, required actions, and completion times were modified as necessary to satisfy the assumptions and conditions in References 2, 3, 5 and 6 which were used to justify extension of AOTs and STIs for Isolation Instrumentation. To the maximum extent practical, the proposed conditions, required actions and completion times are consistent with Reference 12, Section 3.3.6.1, Primary Containment Isolation Instrumentation, Conditions A, B, and C. The changes to the existing requirements are described below in Sections C.2.c through C.2.h.
- c. Proposed LCO 3.2.A, Condition 1: The condition description currently in Table 3.2.A, Note 2 was modified to clarify that the condition could be simultaneously applied to more than one trip function and more than one trip system within a trip function by changing the wording from "if the first column cannot be met for one of the trip systems" to "With one or more channel(s) required by Table 3.2.A inoperable." This change is consistent with the statement in Reference 12, Section 3.3.6.1.A. This is an administrative change that improves clarity because there is no change to the existing interpretation of the requirements.

- d. Proposed LCO 3.2.A, Condition 1: The required action for an inoperable channel currently in Table 3.2.A, Note 2 was changed from "that trip system shall be tripped" to "place channel(s) in trip." This change is consistent with Reference 12, Section, 3.3.6.1.A. This is an administrative change that improves clarity because the proposed required action results in the same condition as tripping the channel and there is no change to the existing interpretation of the requirements. This change is consistent with Reference 12.
- e. Proposed LCO 3.2.A, Condition 1: The repair AOT for an inoperable Primary Containment Isolation function channel was extended from immediately (interpreted as within one hour from Table 3.2.A, Note 2) to: within 12 hours for functions common to RPS (Table 3.2.A, Items 1, 4, and 5); and, within 24 hours for functions common to ECCS and/or not common to RPS or ECCS (Table 3.2.A, Items other than 1, 4, and 5). The AOTs specified for each PCI instrument function are based on the analyses in References 2, 5 and 6. The condition description, required actions and completion time are consistent with Reference 12, except Item 5, High Radiation Steam Line Tunnel, which is being maintained at PBAPS even though it is not included in Reference 12.
- f. Proposed LCO 3.2.A, Condition 2: A new condition, "With one or more automatic functions with primary containment isolation function not maintained," was established. This condition will have required actions that will restore primary containment isolation capability within one hour; or, take the action required by the existing Table 3.2.A, Note 2 within one hour for a loss of isolation function. This new condition and required action is necessary because the analyses in References 2, 5 and 6 did not consider that extending the AOT could result in an extended loss of trip capability and References 5 and 6 were used to justify extending AOTs (proposed LCO 3.2.A, Condition 1) for an inoperable channel. The condition description, required actions and completion time are consistent with Reference 12.
- g. Proposed LCO 3.2.A, Condition 3: This change clarifies and incorporates into the LCO a requirement currently located in Table 3.2.A, Note 2, that specific actions be performed whenever the required actions and completion times of proposed conditions 1 or 2 cannot be met. This is an administrative change that improves clarity because it establishes a link between the LCO and the associated required actions. The required actions specified by proposed Condition 3 are still located in Table 3.2.A (Note 2, Actions A, B, C, D, E and F) and the introductory paragraph was revised to make it consistent with proposed LCO 3.2.A, Condition 3.
- h. Proposed LCO 3.2.A, Conditions and Required Actions: Three new notes were added to provide clarification concerning implementation of required actions. The first note will allow initiation of required actions to be delayed for up to 6 hours when a channel is placed in an inoperable status solely for performance of required Surveillances, provided the associated Trip Function maintains primary containment isolation capability. The second note provides clarification that an inoperable channel or trip system need not be placed in the tripped condition where this would cause the Trip Function to occur. In these cases, if the inoperable channel is not restored to Operable status within the required time, the Action required by Table 3.2.A for that trip Function shall be taken. Both notes are justified based on References 2, 5 and 6. Additionally, a third note specifies that the requirement to restore isolation capability within one hour is not applicable to Item 11, Reactor Cleanup System High Temperature. This exception is

acceptable because the reactor cleanup system high temperature function is for equipment protection (prevents resin overheating) and is not assumed in the PBAPS safety analysis.

- i. Proposed change to Table 3.2.A, Note 1: References to Note 1 in the column headed "Minimum No. of Operable Instrument Channels per Trip System" on Table 3.2.A were deleted because these requirements regarding the number of trip systems and the applicability were incorporated directly into the statements of the LCO and Applicability in TS Section 3.2.A. This is an administrative change to improve clarity and useability.
- j. Proposed change to Table 3.2.A, Note 2: The wording of the condition description and required action in Table 3.2.A, Note 2, was revised from "If the first column cannot be met for one of the trip systems, that trip system shall be tripped or the appropriate action listed below shall be taken" to "If the required actions and associated completion time of Specification 3.2.A, Actions 1 or 2 are not met, take the action listed below for the affected trip function as required by Table 3.2.A." This is an administrative change necessary to implement the other changes described above in Sections C.2.b through C.2.i.
- k. Proposed change to Table 4.2.A: The minimum frequency specified for the performance of Instrument Channel Functional Tests is extended from once per month to once every 3 months for the following instruments: Reactor High Pressure (Shutdown Cooling Permissive); Reactor Low-Low-Low Water Level; Main Steam High Temperature; Main Steam High Flow; Main Steam Low Pressure; Reactor Water Cleanup High Flow; Reactor Water Cleanup High Temperature; and, Reactor Pressure (Feedwater Flush Permissive). These changes to the STI for Instrument Channel Functional Tests are justified by References 5, 6, 9 and 10 and the change is consistent with Reference 12, except for Reactor Pressure (Feedwater Flush Permissive) which is being maintained at PBAPS even though it is not included in Reference 12.
- l. Proposed change to Notes for Tables 4.2.A through 4.2.F: Note 1 of the combined Notes for Tables 4.2.A through 4.2.F and References to Note 1 on Table 4.2.A were deleted. Note 1 states that frequency of performance for functional tests is "Initially once every month" but that the frequency could be changed based on failure rate data if the proposed change and supporting failure rate data was reviewed and approved by the AEC. References 1 through 10 constitute the review and approval of failure rate data and provide the justification for extending functional test intervals from once per month to once every 3 months. The requirements for extending instrumentation functional test frequency beyond the currently existing interval that Note 1 identifies are satisfied by this TSCR; therefore, Note 1 is no longer applicable. Deletion of Note 1 to Notes for Tables 4.2.A through 4.2.F and References to Note 1 on Table 4.2.A is an administrative change.
- m. Proposed Table 3.2.A, Note 2, Action B: The proposed change to Note 2, Action B allows 12 hours (instead of 8 hours) to isolate the Main Steam Lines whenever the trip system associated with isolating MSIVs is inoperable and cannot be placed in trip within the required completion time. This change is justified because 12 hours is the completion time in NUREG-0123 and NUREG-1433, Specification 3.3.6.1, Condition D. The proposed change is acceptable because: isolation capability is still provided by the redundant MSIV isolation instrument channels; there is a new concurrent requirement in

proposed Condition 2 to isolate the MSL within one hour if automatic MSL isolation capability is lost; the additional 4 hours will allow for a more orderly reduction in power and isolation of the MSL; and, the change will not allow continuous operation with plant conditions such that a single failure will preclude the affected isolation function from being performed. As a result, the change does not affect the current analysis assumptions. This change is consistent with Reference 12.

- n. Proposed Table 3.2.A, Note 2, Actions C, D and F: The proposed change to Note 2, Actions C, D and F, specifies a completion time of "within one hour" for isolation of the affected penetration whenever the trip system associated with isolating the penetration is inoperable and cannot be placed in trip within the required completion time. The existing requirements do not specify a completion time. This change is consistent with NUREG-1433, Section 3.3.6.1, Condition F.
- o. The Bases for TS Section 3/4.2.A were revised as shown in Attachment 11 to reflect the changes discussed above or to correct typographical errors.

C.3. Core and Containment Cooling Systems (TS 3.2.B)

The changes proposed for PBAPS TS Section 3.2.B, Core and Containment Cooling Systems, are shown in Attachment 5 and described below.

- a. The proposed change deletes the existing statements of Applicability and Objective for Section 3.2, Protective Instrumentation (TS 3/4.2), because these statements, as currently written, do not establish any requirements. The proposed change establishes for each separate category of protective instrumentation, concise and complete statements of the LCO and Applicability which are consistent with Reference 12. The changes to the statements of LCO requirements and Applicability for TS Section 3.2.B, Core and Containment Cooling Systems (CCCS), are as follows:
 - i. The proposed change creates a new page, 57a, for the CCCS requirements and separates the LCO requirements and the Applicability requirements into separate sections under appropriate headings.
 - ii. Proposed LCO 3.2.B incorporates and provides additional clarification to an existing requirement in Table 3.2.B, Note 1 that there shall be two Operable trip systems for each function. The proposed LCO states "there shall be two Operable or tripped trip systems for each Trip Function except as noted in Table 3.2.B." These changes clarify that either of the two trip systems can be Operable or tripped and that some of the Trip Functions listed in Table 3.2.B do not have two trip systems per function.
 - iii. There were no changes to the Applicability requirements other than the reformatting which places the Applicability statement under a new and separate heading.

- b. Proposed LCO 3.2.B contains a new heading, "Conditions and Required Actions." This change establishes a common description of the conditions associated with inoperable channels for the instruments in Table 3.2.B and directs completion of specific required actions for each function identified on Table 3.2.B. The proposed section will state, "With one or more channel(s) required by Table 3.2.B inoperable in one or more Trip Functions, take the Action required by Table 3.2.B." This is an administrative change that improves clarity because it establishes a link between the LCO and the associated required actions. This change is consistent with Reference 12.
- c. Proposed LCO 3.2.B, Conditions and Required Actions: The specific conditions and required actions for inoperable ECCS instrument channels were retained in the Notes to Table 3.2.B because the multiple categories of instruments in Table 3.2.B require different required actions and completion times to satisfy the assumptions in References 1 through 10. The categories of instruments in Table 3.2.B include: ECCS common to RPS (Reference 2); ECCS not common to RPS (Reference 3); Containment Isolation common to RPS or ECCS (Reference 5); Power Monitoring Instruments (Reference 3); Undervoltage and Degraded Voltage Instruments (Not evaluated in References 1 through 8); and, indication only instrumentation without any actuation function. Separate Condition and Required Actions for each of these categories are included as Notes to Table 3.2.B to ensure that the assumptions used in References 1, 2, 3, 5, 6, 7, 8, 9 and 10 that justified extending the instrumentation AOTs and STIs for each category of instruments were incorporated into this Section. To the maximum extent practical, the proposed conditions and required actions are consistent with Reference 12, Sections 3.3.1.1, 3.3.5.1, 3.3.5.2, and 3.3.6.1, as appropriate. The resulting changes to the existing requirements are described below in sections C.3.d through C.3.n.
- d. Proposed Note 1 to Table 3.2.B: The existing requirement in Table 3.2.B, Note 1, that "there shall be two operable trip systems" for each function in Table 3.2.B was incorporated into the statement of proposed LCO 3.2.B as discussed in section C.3.a.ii, above. This is an administrative change to improve clarity and useability.
- e. Proposed Note 1 to Table 3.2.B: The proposed change modifies Table 3.2.B and Note 1 to Table 3.2.B so that Note 1 identifies the conditions and required actions for those functions in Table 3.2.B that are not within the scope of analysis of References 1, 2, 3, 4, 5, 6, 7 or 8. These functions include:
- 4 kV Emergency Bus Undervoltage Relay (HGA)
 - 4 kV Emergency Bus Sequential Loading Relay
 - Emergency Transformer Undervoltage
 - Degraded Voltage (27N) (non-LOCA relay)
 - Degraded Voltage (27N) (LOCA relay)
 - Emergency Transformer Degraded Voltage

In conjunction with this change, the following changes were made to the conditions and required actions in Note 1:

- i. The condition description currently in Table 3.2.B, Note 1 was modified to clarify that the condition could be simultaneously applied to more than one trip function and more than one trip system within a trip function by changing the wording from "If the first column cannot be met for one of the trip systems" to "With one or more required channel(s) inoperable in one or more trip functions." This change is consistent with the present interpretation and the approach in Reference 12 for similar instrumentation. This is an administrative change that improves clarity because there is no change to the existing interpretation of the requirements.
- ii. The repair AOTs for inoperable channels for the trip functions listed above were specified as "within one hour." The existing Note 1 does not specify a completion time which is interpreted as the action is required within one hour. This is an administrative change that improves clarity because there is no change to the existing interpretation of the requirements.
- iii. Proposed Note 1 maintains the existing requirement to place the reactor in "the Cold Shutdown Condition within 24 hours" if the required action or completion time are not met.
- f. Proposed Note 6 to Table 3.2.B: The proposed change deletes Table 3.2.B, Note 6, because it is superseded by proposed Note 10 which is discussed below in Section C.3.i. Note 6 specifies actions and completion times for the inoperability of an instrument channel that transfers RCIC suction to the suppression pool when there is a condensate storage tank low level. This is an administrative change required to support other proposed changes.
- g. Proposed Note 8 to Table 3.2.B: The proposed change adds Note 8 to Table 3.2.B and marks Table 3.2.B so that proposed Note 8 replaces existing Note 1 and establishes conditions, required actions, and completion times for the following subset of trip functions in Table 3.2.B:

Reactor Low-Low-Low Water Level;²
Reactor Low Level (inside shroud);
Containment High Pressure;

² The Reactor Low-Low-Low Water Level in Table 3.2.B is associated with instrument channels that initiate: LPCI and Core Spray (CS); ADS; and, Emergency Diesel Generators. Separate required actions (proposed Notes 8 and 11) are specified for these functions consistent with Reference 12.

High Drywell Pressure;³
RHR (LPCI) Trip System Bus Power Monitor;
Core Spray Trip System Bus Power Monitor;
ADS Trip System Bus Power Monitor;
HPCI Trip System Bus Power Monitor;
RCIC Trip System Bus Power Monitor; and,
Core Spray Sparger to Reactor Pressure Vessel d/p.

The proposed conditions, required actions and completion times in proposed Note 8 satisfy the assumptions and conditions used in Reference 3 to justify extension of ECCS AOTs and STIs for ECCS instrumentation. To the maximum extent practical, the proposed conditions and required actions are consistent with Reference 12, Section 3.3.5.1, Emergency Core Cooling System Instrumentation, Conditions A, B (except HPCI) and H. The specific changes included in proposed Note 8 are discussed below:

- i. The condition description currently in Table 3.2.B, Note 1 was modified to clarify that the condition could be simultaneously applied to more than one trip function and more than one trip system within a trip function by changing the wording from "if the first column cannot be met for one of the trip systems" to "with one or more required channels inoperable in one or more Trip Functions."
- ii. The AOTs for inoperable ECCS channels for the trip functions listed above (Note 8, Action 1) were extended to 24 hours from the requirement currently in Table 3.2.B, Note 1 to place the channel in trip immediately (interpreted as within one hour). This change is consistent with Reference 3.
- iii. Specific requirements, Note 8, Actions 2 and 3, were added to prevent the proposed extended AOT from resulting in an extended loss of function since a loss of function was not considered in Reference 3.
- iv. Proposed Note 8 eliminates the requirement currently in Table 3.2.B, Note 1 to place the reactor in "the Cold Shutdown Condition within 24 hours" if the required action or completion time are not met. Proposed Note 8 requires only that the associated supported features be declared inoperable immediately. This change is acceptable because the worst case result of an inoperable channel is that the supported feature or system may not perform its intended function when required. By declaring the supported feature or system inoperable and taking the required actions for that system or feature, the plant is within the bounds of the Technical Specifications and approved actions. Additionally, with the supported feature or system inoperable, the inoperable channel is no longer required to be operable.

³ The High Drywell Pressure function in Table 3.2.B is associated with instrument channels that initiate: LPCI and CS; ADS (in conjunction with other permissives); HPCI and RCIC, and, Emergency Diesel Generators. Separate required actions (proposed Notes 8, 11 and 14) are specified for these functions consistent with Reference 12.

- v. Proposed Note 8, Condition 2, states that "Within one hour from discovery of loss of initiation capability in both trip systems for feature(s) supported by this trip function, declare supported feature(s) inoperable." Proposed Note 8, Condition 2 is modified by footnote (1) which states that the required actions associated with this condition is "only applicable to the High Drywell Pressure and Reactor Low-Low-Low Water Level functions." This change prevents an extended loss of function of ECCS equipment initiated by High Drywell Pressure and Reactor Low-Low-Low Water Level functions but allows operation to continue for 24 hours with loss of functions which prevent inadvertent initiation of containment spray and/or loss of ECCS bus power monitors. This change is consistent with NUREG-1433, LCO 3.3.5.1, Required Action B.1.
- vi. Finally, the ECCS channels for the trip functions listed above are also modified by proposed Note 15 or 16 that will allow initiation of required actions to be delayed for up to 6 hours when a channel is placed in an inoperable status solely for performance of required Surveillances. Note 15, applied to those instrument functions which actuate CCCS equipment, permit the 6 hour delay in the initiation of required actions only if the associated Trip Function maintains trip capability. Note 16, applied to those functions which provide indication only, permit the 6 hour delay in the initiation of required actions without qualification.

The proposed changes resulting from the addition of Notes 8, 15 and 16 are justified based on the analyses in References 3 and 10 and are implemented consistent with the terminology and approach used in Reference 12, Section 3.3.5.1, Emergency Core Cooling System Instrumentation, Conditions A, B (except HPCI) and H.

- h. Proposed Note 9 to Table 3.2.B: The proposed change adds Note 9 to Table 3.2.B and marks Table 3.2.B so that proposed Note 9 replaces existing Note 1 and establishes conditions, required actions, and completion times for the following subset of trip functions in Table 3.2.B:

Reactor High Water Level (Trips HPCI & RCIC);
Reactor Low Pressure (400-500 psig);
Reactor Low Pressure (200-250 psig);
Core Spray Pump Start Timer; and,
LPCI Pump Start Timer (Four pumps).

Each of the functions listed above provides an interlock or permissive for an ECCS injection signal.

The changes incorporated in proposed Note 9 are the same as the changes in proposed Note 8 described above except as follows:

- i. Proposed Note 8 requires that an inoperable channel be placed in trip (if not restored to Operable) within 24 hours or the associated supported features must be declared inoperable immediately. Proposed Note 9 specifies that an inoperable channel must be restored to Operable within 24 hours or the associated supported features must be declared inoperable immediately. This

difference recognizes that, in a one out-of-two twice logic, placing an inoperable channel in trip has two consequences: it provides greater assurance that an actuation will occur when required; and, it increases the potential for an inadvertent actuation. Therefore, Note 9 does not permit continued operation with an inoperable channel in trip for an instrument channel that provides an interlock or permissive because both the failure to actuate and an inadvertent actuation are undesirable.

- ii. Proposed Note 9, Condition 2, states that "Within one hour from discovery of loss of initiation capability in both trip systems for feature(s) supported by this trip function, declare supported feature(s) inoperable." Proposed Note 9, Condition 2 is modified by footnote (2) which states that the required actions associated with this condition is "Not applicable to Reactor High Water level Function." The proposed Note allows HPCI and/or RCIC to remain Operable for 24 hours following the loss of the functions which stops injection when Reactor water level has been re-established. This function is not assumed in any accident analysis. This change is consistent with NUREG-1433, LCO 3.3.5.1, Required Action C.1.

The proposed conditions and required actions in proposed Note 9 satisfy the assumptions and conditions in References 3 and 10 used to justify extension of ECCS AOTs and STIs. To the maximum extent practical, the proposed conditions and required actions are consistent with Reference 12, Section 3.3.5.1, Emergency Core Cooling System Instrumentation, Conditions A, C and H.

- i. Proposed Note 10 to Table 3.2.B: The proposed change adds Note 10 to Table 3.2.B and marks Table 3.2.B so that proposed Note 10 replaces existing Note 1 and establishes conditions, required actions, and completion times for the following subset of trip functions in Table 3.2.B:

Condensate Storage Tank (CST) Low Level (HPCI);
Suppression Chamber High Level; and,
Condensate Storage Tank Low Level (RCIC).

Proposed Note 10 establishes conditions, required actions and completion times for those functions which transfer the HPCI and RCIC pump suctions from the CST to the suppression pool. Proposed Note 10 replaces existing Note 1 for functions associated with HPCI and replaces Note 6 for the function associated with RCIC. The specific changes that proposed Note 10 makes to the existing required actions for an inoperable channel are discussed below:

- i. The condition description currently in Table 3.2.B, Note 1 (HPCI) and Note 6 (RCIC) were modified to clarify that the condition could be simultaneously applied to more than one trip function and more than one trip system within a trip function by changing the wording to "with one or more required channel(s) inoperable in one or more Trip Functions."

- ii. The proposed change modifies the required actions if an inoperable channel cannot be restored or placed in trip within the completion time. The proposed change allows aligning the affected (RCIC or HPCI) pump suction to the suppression pool or declaring the affected system inoperable. Currently, Note 1 requires placing the channel in trip (equivalent to transferring suction to the suppression pool) or requiring a plant shutdown (Note 1 for HPCI) or declaring RCIC inoperable (Note 6 for RCIC). The proposed requirement to declare the affected system (HPCI or RCIC) inoperable is equivalent to or an acceptable alternative to existing Table 3.2.B because both the existing and proposed required action places the plant within the bounds of TS approved actions or in a condition where the inoperable channel(s) is no longer required to be operable. Aligning the pump suction from the CST to the suppression pool is an acceptable alternative required action because it completes the intended function of instruments listed above.
- iii. Proposed Note 10 extends the AOTs for inoperable channels for the trip functions listed above (Action 1) to 24 hours from the existing requirements currently in Table 3.2.B, Notes 1 and 6 to place the channel in trip immediately (interpreted as within one hour). This change for HPCI and RCIC is justified by References 3 and 6, respectively.
- iv. Specific requirements, Note 10, Actions 2 and 3, were added to prevent the proposed extended AOT from resulting in an extended loss of function since an extended loss of function was not considered in the Reference 3 analysis which extended the AOT.
- v. Finally, the ECCS channels for the trip functions listed above are also modified by proposed Note 15 that allows initiation of required actions to be delayed for up to 6 hours when a channel is placed in an inoperable status solely for performance of required Surveillances provided the associated Trip Function maintains trip capability.

The proposed conditions, required actions and completion times in proposed Note 10 satisfy the assumptions and conditions used to justify extension of ECCS AOTs and STIs in References 3, 7, 8 and 10. To the maximum extent practical, the proposed conditions and required actions are consistent with Reference 12, Sections 3.3.5.1, Conditions A, D and H (HPCI) and Sections 3.3.5.2, Conditions A, D and E (RCIC).

- j. Proposed Note 11 to Table 3.2.B: The proposed change adds Note 11 to Table 3.2.B and marks Table 3.2.B so that proposed Note 11 establishes conditions, required actions, and completion times and replaces Note 1 for the following subset of trip functions in Table 3.2.B:

Confirmatory Low Level (ADS permissive);
High Drywell Pressure (ADS);
Reactor Low-Low-Low Water Level (ADS).

The proposed conditions, required actions and completion times in proposed Note 11 adopt the AOTs from NUREG-0123, and then add the extended AOTs justified in Reference 3. This combination of changes is consistent with NUREG-1433 and satisfies the assumptions used in the justification of extensions of ECCS AOTs and STIs for instrumentation that provide actuations or permissives for ADS in Reference 3. These assumptions and conditions include the interrelationship between TS requirements for ADS, HPCI and RCIC. Because of the diversity of sensors available to provide initiation signals for ADS and the redundancy of the design (HPCI, RCIC and ADS), an allowable out of service time of 8 days has been shown to be acceptable (NUREG-0123 requirement of 7 days extended by 24 hours as justified by Reference 3. This combination of AOTs is reflected in NUREG-1433, LCO 3.3.5.1, Condition F). If either HPCI or RCIC is inoperable, the AOT is shortened to 96 hours (NUREG-0123 requirement of 72 hours extended by 24 hours as justified by Reference 3. This combination of AOTs is reflected in NUREG-1433, LCO 3.3.5.1, Condition F). If the status of HPCI or RCIC changes such that the Completion Time changes from 8 days to 96 hours, the 96 hours begins upon discovery of HPCI or RCIC inoperability and the total time for an inoperable, untripped channel cannot exceed 8 days. To the maximum extent practical, the proposed conditions, required actions and completion times are consistent with Reference 12, Section 3.3.5.1, Actions A, F and H. The specific changes included in proposed Note 11 are discussed below:

- i. The condition description currently in Table 3.2.B, Note 1 was modified to clarify that the condition could be simultaneously applied to more than one trip function and more than one trip system within a trip function by changing the wording from "if the first column cannot be met for one of the trip systems" to "with one or more required channel(s) inoperable in one or more Trip Functions."
- ii. The AOT for placing an inoperable channel in trip was extended from the requirement currently in Table 3.2.B, Note 1 to place the channel in trip immediately (interpreted as within one hour) to the following: within 96 hours from discovery of an inoperable channel concurrent with HPCI or RCIC inoperable; and, within 8 days from discovery of an inoperable channel if both HPCI and RCIC are operable. These contingent assumptions are consistent with the assumptions used in Reference 3 as implemented in Reference 12.
- iii. Specific requirements, Note 11, Actions 1 and 3, were added to prevent the proposed extended AOT from resulting in an extended loss of function since a loss of function was not considered in Reference 3.
- iv. Proposed Note 11 eliminates the requirement currently in Table 3.2.B, Note 1 to place the reactor in "the Cold Shutdown Condition within 24 hours" if the required action or completion time are not met. Proposed Note 10 requires only that ADS valves be declared inoperable immediately. This change is acceptable because the worst case result of an inoperable channel is that ADS may not perform its intended function when required. By declaring ADS valves inoperable and taking the required actions, the plant is within the bounds of the Technical Specifications and approved actions. Additionally, with ADS valves inoperable, the inoperable channel is no longer required to be operable.

- v. Finally, the instrument channels for the trip functions listed above are also modified by proposed Note 15 that will allow initiation of required actions to be delayed for up to 6 hours when a channel is placed in an inoperable status solely for performance of required Surveillances. Note 15, applied to those instrument functions which actuate CCCS equipment, permits the 6 hour delay in the initiation of required actions only if the associated trip function maintains trip capability.

To the maximum extent practical, the proposed conditions, required actions and completion times are consistent with Reference 12, Section 3.3.5.1, Actions A, F and H.

- k. Proposed Note 12 to Table 3.2.B: The proposed change adds Note 12 to Table 3.2.B and marks Table 3.2.B so that proposed Note 12 establishes conditions, required actions, and completion times and replaces Note 1 for the following subset of trip functions in Table 3.2.B:

ADS Actuation Timer
ADS Bypass Timer
RHR (LPCI) Pump Discharge Pressure Interlock
Core Spray Pump Discharge Pressure Interlock

Each of the functions listed above provides an interlock or permissive related to the actuation of ADS.

The changes incorporated in proposed Note 12 are the same as the changes in proposed Note 11 described above except as follows. Proposed Note 11 requires that an inoperable channel be placed in trip (if not restored to Operable) within the AOT (8 days if both HPCI and RCIC are Operable and 96 hours if either HPCI or RCIC is not Operable) or ADS valves must be declared inoperable within one hour. Proposed Note 12 does not permit operation to continue when the inoperable channel is placed in trip. Instead, Note 12 specifies that an inoperable channel must be restored to Operable within the AOT or ADS valves must be declared inoperable. This difference recognizes that, in a one out-of-two twice logic, placing an inoperable channel in trip has two consequences: It provides greater assurance that an actuation will occur when required; and, it increases the potential for an inadvertent actuation. Therefore, Note 12 does not permit continued operation with an inoperable channel in trip for an instrument channel that provides an interlock or permissive because both the failure to actuate and an inadvertent actuation are both undesirable.

The proposed conditions and required actions in proposed Note 12 satisfy the assumptions and conditions in References 3 and 10 used to justify extension of ECCS AOTs and STIs. To the maximum extent practical, the proposed conditions and required actions are consistent with Reference 12, Section 3.3.5.1, Emergency Core Cooling System Instrumentation, Conditions A, G and H.

- l. Proposed Note 13 to Table 3.2.B: The proposed change adds Note 13 to Table 3.2.B and marks Table 3.2.B so that proposed Note 13 establishes conditions, required actions, and completion times and replaces Note 1 for the following subset of trip functions in Table 3.2.B:

Reactor Low Pressure ($50 \leq P \leq 75$ psig)
RCIC Turbine High Flow
RCIC Turbine High Flow Time Delay
RCIC Turbine Compartment Wall Temperature
RCIC Steam Line Area Temperature
RCIC Steam Line Low Pressure
HPCI Turbine Steam Line High Flow
HPCI Turbine High Flow Time Delay
HPCI Steam Line Low Pressure
HPCI Turbine Compartment Temperature
HPCI Steam Line Area Temperature
HPCI/RHR Valve Station Area Temperature

The proposed conditions, required actions and completion times in proposed Note 13 satisfy the assumptions and conditions used in Reference 6 to justify extension of AOTs and STIs for isolation actuation instrumentation. To the maximum extent practical, the proposed conditions and required actions are consistent with Reference 12, Section 3.3.6.1, Primary Containment Isolation Instrumentation, Conditions B, A and F. The specific changes included in proposed Note 13 are discussed below:

- i. The condition description currently in Table 3.2.B, Note 1 was modified to clarify that the condition could be simultaneously applied to more than one trip function and more than one trip system within a trip function by changing the wording from "if the first column cannot be met for one of the trip systems" to "with one or more required channels inoperable in one or more Trip Functions."
- ii. The AOTs for inoperable isolation actuation channels for the trip functions listed above (Action 1) were extended to 24 hours from the requirement currently in Table 3.2.B, Note 1 to place the channel in trip immediately (interpreted as within one hour). This change is consistent with Reference 6.
- iii. Specific requirements, Note 13, Actions 2 and 3, were added to prevent the proposed extended AOT from resulting in an extended loss of function since a loss of function was not considered in Reference 3.
- iv. Proposed Note 13 eliminates the requirement currently in Table 3.2.B, Note 1 to place the reactor in "the Cold Shutdown Condition within 24 hours" if the required action or completion time are not met. Proposed Note 13 requires only that the penetration flow path with isolation capability not maintained be isolated within 25 ($24 + 1$) hours. This change is acceptable because the worst case result of an inoperable channel is that the affected penetration will not automatically isolate when required. By isolating the affected penetration flow path and taking the required actions for the affected system, the plant is within the bounds of the Technical Specifications and approved actions. Additionally, with the affected penetration flow path isolated, the inoperable channel is no longer required to be operable.
- v. Finally, the isolation instrumentation channels for the trip functions listed above are also modified by proposed Note 15 that will allow initiation of required actions to be delayed for up to 6 hours when a channel is placed in an

inoperable status solely for performance of required Surveillances. Note 15, applied to those instrument functions which actuate CCCS equipment, permit the 6 hour delay in the initiation of required actions only if the associated Trip Function maintains trip capability.

The proposed changes resulting from the addition of Notes 13 and 15 are justified based on the analysis in Reference 6 and are implemented consistent with the terminology and approach used in Reference 12, Section 3.3.6.1, Conditions B, A and F.

- m. Proposed Note 14 to Table 3.2.B: The proposed change adds Note 14 to Table 3.2.B and marks Table 3.2.B so that proposed Note 14 establishes conditions, required actions, and completion times and replaces Note 1 for the Reactor Low-Low Water Level trip function in Table 3.2.B. This function initiates HPCI and RCIC.

The proposed conditions, required actions and completion times in proposed Note 14 satisfy the assumptions and conditions used in Reference 3 (for HPCI) and Reference 8 (for RCIC) to justify extension of AOTs and STIs for HPCI and RCIC actuation instrumentation. To the maximum extent practical, the proposed conditions and required actions are consistent with Reference 12, Section 3.3.5.1, Emergency Core Cooling System Instrumentation, Conditions A, B and H (for HPCI) and Section 3.3.5.2, Reactor Core Isolation Cooling System Instrumentation, Conditions A, B and E (for RCIC). The specific changes included in proposed Note 14 are discussed below:

- i. The condition description currently in Table 3.2.B, Note 1 was modified to clarify that the condition could be simultaneously applied to more than one trip function and more than one trip system within a trip function by changing the wording from "if the first column cannot be met for one of the trip systems" to with one or more required channels inoperable in one or more Trip Functions."
- ii. The AOTs for inoperable HPCI and RCIC initiation channels were extended to 24 hours from the requirement currently in Table 3.2.B, Note 1 to place the channel in trip immediately (interpreted as within one hour). This change is consistent with References 3 and 6.
- iii. Specific requirements, Note 14, Actions 1 and 3, were added to prevent the proposed extended AOT from resulting in an extended loss of function since a loss of function was not considered in References 3 and 6.
- iv. Proposed Note 14 eliminates the requirement currently in Table 3.2.B, Note 1 to place the reactor in "the Cold Shutdown Condition within 24 hours" if the required action or completion time are not met. Proposed Note 14 requires only that the affected system (HPCI or RCIC) be declared inoperable. This change is acceptable because the worst case result of an inoperable channel is that the affected system may not perform its intended function when required. By declaring the affected system inoperable and taking the required actions for that system, the plant is within the bounds of the Technical Specifications and approved actions. Additionally, with the affected system inoperable, the inoperable channel is no longer required to be operable.

- v. Finally, the HPCI and RCIC initiation channels are also modified by proposed Note 15 that will allow initiation of required actions to be delayed for up to 6 hours when a channel is placed in an inoperable status solely for performance of required Surveillances. Note 15, applied to those instrument functions which actuate CCCS equipment, permit the 6 hour delay in the initiation of required actions only if the associated trip function maintains trip capability.

The proposed changes resulting from the addition of Notes 14 and 15 are justified based on the analyses in References 3 and 8 and are implemented consistent with the terminology and approach used in Reference 12, Section 3.3.5.1, Condition A, B and H (for HPCI) and Section 3.3.5.2, Conditions A, B and E (for RCIC).

- n. Proposed Notes 15 and 16 to Table 3.2.B: The addition of proposed Notes 15 and 16 to Table 3.2.B is discussed above in Sections C.3.g through C.3.m. The addition of these notes is justified by References 3 and 8 and is consistent with Reference 12.
- o. Proposed change to Table 4.2.B: The minimum frequency specified for the performance of Instrument Channel Functional Tests is extended from once per month to once every 3 months for the following instruments:

Reactor Water Level;
Drywell Pressure;
Reactor Pressure;
Reactor Pressure (PCIS/LPCI Interlock);
ADS (LPCI and CS Pump discharge Pressure Interlocks);
Trip system Bus Power Monitors;
Core Spray Sparger d/p;
Steam Line High Flow (HPCI and RCIC);
Steam Line High Flow Timers(HPCI and RCIC);
Steam Line High Temperature (HPCI and RCIC);
Safeguards Area High Temperature;
HPCI and RCIC Steam Line Low Pressure; and,
HPCI Suction Source Levels.

These changes to the STI for Instrument Channel Functional Tests are justified by References 3, 5, 6 and 10 and the change is consistent with Reference 12.

- p. Proposed change to Notes for Tables 4.2.A through 4.2.F: Note 1 of the combined Notes for Tables 4.2.A through 4.2.F and References to Note 1 on Table 4.2.B were deleted. Note 1 states that frequency of performance for functional tests is "Initially once every month" but that the frequency could be changed based on failure rate data if the proposed change and supporting failure rate data was reviewed and approved by the AEC. References 1 through 10 constitute the review and approval of failure rate data and provide the justification for extending functional test intervals from once per month to once every 3 months. The requirements for extending instrumentation functional test frequency beyond the currently existing interval that Note 1 identifies are satisfied by this TSCR; therefore, Note 1 is no longer applicable. Deletion of Note 1 for Tables 4.2.A through 4.2.F and References to Note 1 on Table 4.2.B is an administrative change.

- q. The Bases for TS Section 3/4.2.B were revised to reflect the changes discussed above or to correct typographical errors as shown in Attachment 11.

C.4. Control Rod Block Actuation (TS 3.2.C)

The changes proposed for PBAPS TS Section 3.2.C, Control Rod Block Actuation, are shown in Attachment 6 and described below.

- a. The proposed change deletes the existing statements of Applicability and the Objective for Section 3.2, Protective Instrumentation (TS 3/4.2), because these statements, as currently written, do not establish any requirements. The proposed change establishes for each separate category of protective instrumentation, concise and complete statements of the LCO and Applicability which are consistent with Reference 12. The changes to the LCO requirements for TS Section 3.2.C, Control Rod Block Actuation, are as follows:
- i. The proposed change establishes an explicit statement of the LCO requirements for Control Rod Block instrumentation that is consistent with Reference 12.
 - ii. The proposed LCO 3.2.C clarifies the existing LCO requirement concerning the number of required trip systems by relocating from Table 3.2.C, Note 1, the requirement that there shall be two Operable or tripped trip systems for each control rod block function and including that requirement in the LCO as "there shall be two Operable or tripped trip systems for each function except as noted in Table 3.2.C." In conjunction with this change, proposed Note 15 will be added to Table 3.2.C indicating that there is only one trip system associated with the control rod block actuated by the Scram Discharge Instrument Volume High Level.
 - iii. The proposed change eliminates the requirement that the cumulative time a Rod Block Monitor (RBM) is inoperable must be less than 24 hours in any thirty day period. This limitation on the amount of time a channel may be inoperable is not in NUREG-0123 and was not an assumption used in Reference 4 and; therefore, is not needed to ensure RBM system reliability. This change is acceptable because the remaining Operable channel is adequate to perform the control rod block function. Additionally, PBAPS Technical Specifications include a requirement (TS Section 3.3.B.5) that requires both RBM channels be operable when operating with a limiting control rod pattern. This additional restriction is being maintained although it is not found in NUREG-0123 and is not an assumption in Reference 4. Therefore, elimination of the cumulative time limit of 24 hours in 30 days will not increase the amount of time that the plant operates with less than the full complement of RBM systems and PBAPS will not operate with a limiting control rod pattern with an inoperable RBM channel.
- b. The proposed changes improve the clarity and useability of the Applicability requirements for TS Section 3.2.C, Control Rod Block Actuation, by locating all of the existing applicability requirements in a single location under the appropriate heading. The changes to the Applicability requirements are as follows:

- i. The proposed Applicability for LCO 3.2.C clarifies the existing LCO requirement for the Rod Block Monitor Function with a specific applicability statement that "The Rod Block Monitor (RBM) shall be Operable with setpoints as required by Table 3.2.C and the Core Operating Limits Report." This change makes the statement of the applicability for the RBM complete by incorporating the requirements in the existing LCO and the requirements in existing Table 3.2.C, Note 11, which states that the values for the Rod Block Monitor high trip setpoint, intermediate trip setpoint, low trip setpoint, and downscale trip setpoint are located in the Core Operating Limits Report (COLR).
- ii. The proposed LCO 3.2.C Applicability for the Rod Block Monitor Function will be modified by a note that states, "Section 3.3.B.5 is Applicable during operation with a limiting control rod pattern." This cross Reference is necessary because existing TS Section 3.3.B.5 supersedes the LCO and Applicability requirements of TS Section 3.2.C by requiring that both channels (i.e., both trip systems because there is only one channel per trip system for the RBM function) must be Operable, "During operation with limiting control rod patterns, as determined by qualified personnel." Therefore, the addition of this Note is necessary to make the LCO and Applicability of TS Section 3.2.C complete.
- iii. The proposed Applicability for LCO 3.2.C clarifies the existing LCO requirement for the Average Power Range Monitor (APRM), Intermediate Range Monitor (IRM), Source Range Monitor (SRM) and RBM Control Rod Block (CRB) Functions by locating all of the existing applicability requirements in a single location and under the appropriate heading. The proposed change combines the applicability requirements in the existing LCO 3.2.C.1 and the applicability requirements in Table 3.2.C, Note 1, and includes these requirements under the heading "Applicability" for proposed LCO 3.2.C. The Applicability requirements in Table 3.2.C, Note 1 are deleted.
- iv. The proposed change corrects an error in existing Table 3.2.C, Note 1 that states the APRM rod blocks need not be Operable in the Startup Mode. In accordance with existing Table 3.2.C, the APRM Upscale (Startup Mode) function provides a rod block when APRM power is less than 12% and the reactor mode switch is in Startup. Therefore, when Note 1 from Table 3.2.C is transferred to proposed Applicability section of LCO 3.2.C it states: "The APRM and RBM functions are not required to be Operable when the Reactor Mode Switch is in Startup except for the APRM Upscale (Startup Mode) which is not required to be Operable when the Reactor Mode Switch is in Run." This change is consistent with the current interpretation of the Technical Specifications.
- v. The proposed Applicability for LCO 3.2.C combines the applicability requirements in the existing LCO 3.2.C.1 and the applicability requirements in Table 3.2.C, Note 9, and includes these requirements under the heading "Applicability" for proposed LCO 3.2.C. The Applicability requirements in Table 3.2.C, Note 9, are deleted. This change clarifies the existing LCO requirement for the scram discharge instrument volume Control Rod Block (CRB) Functions by locating all of the existing applicability requirements in a single location and under the appropriate heading.

Each of the changes listed in C.4.b above is an administrative change because there are no technical changes (either actual or interpretational) to the existing interpretation of PBAPS Technical Specifications. The changes in the location, wording, numbering and formatting of the LCO 3.2.C described above were necessary to support other changes described elsewhere in this section or to improve the clarity or useability of the Technical Specifications.

- c. Proposed LCO 3.2.C contains a new heading, "Conditions and Required Actions." This change establishes a common description of the conditions associated with inoperable channels for the instruments in Table 3.2.C and directs completion of required actions in Table 3.2.C, Notes 1, 9 and 10, and proposed Note 12 which is discussed later. The proposed section will state, "With one or more channels required by Table 3.2.C Inoperable in one or more Trip Functions, take the Action required by Table 3.2.C." This is an administrative change intended to provide consistency between TS Section 3.2.C and the other TS in Section 3.2.
- d. Proposed change to Table 3.2.C, Note 1: The LCO applicability requirements for the SRM, IRM, and APRM control rod block functions are being deleted from Note 1 because these requirements are being relocated to the Applicability statement incorporated into LCO 3.2.C. This is an administrative change because there are no technical changes (either actual or interpretational) to the Technical Specifications. Note 1 to Table 3.2.C also contains the required actions or completion times for the SRM and RBM (power biased) control rod block functions. The condition description, required actions and completion times for the RBM functions are being relocated to proposed Note 12 and this change is discussed below in Section C.4.e. No changes were made to the required actions for the SRM control rod block functions because the AOTs for these functions were not addressed in Reference 4.
- e. Proposed Note 12 to Table 3.2.C, (Rod Block Monitor function): The proposed change adds new conditions, required actions, and completion times for the Rod Block Monitor (Power Biased) and Rod Block Monitor Downscale functions. The conditions, required actions and completion times for the RBM functions are located in proposed Note 12.

Currently, Table 3.2.C, Note 1, establishes the required actions and completion times for the RBM functions. Note 1 allows an inoperable channel to remain untripped for a period of seven days provided that the operable system is functionally tested immediately and daily thereafter. After seven days the inoperable RBM channel must be placed in trip. If there is an inoperable channel in both trip systems, then both trip systems must be tripped immediately.

The conditions, required actions, and completion times for the RBM function in Note 1 were modified as necessary to satisfy the assumptions and conditions in Reference 4 which was used to justify extension of AOTs and STIs for the RBM functions. To the maximum extent practical, the proposed conditions, required actions and completion times are consistent with Reference 12, Section 3.3.2.1, Control Rod Block instrumentation, Conditions A and B. The changes to the existing requirements are described below:

- i. The condition description currently in Table 3.2.C, Note 1 was modified to clarify that the condition could be simultaneously applied to more than one trip function and more than one trip system within a trip function by changing the wording from "If the first column cannot be met for one of the two trip systems" to "With one or more required Rod Block Monitor channel(s) inoperable." This change is consistent with the statement in Reference 12, Section 3.3.2.1, Conditions A and B. This is an administrative change that improves clarity because there is no change to the existing interpretation of the requirements.
- ii. Proposed Note 12 requires an inoperable RBM channel to be restored to operable within 24 hours (instead of the existing requirement of within 7 days) or placed in trip within the following one hour. This change is consistent with the assumptions and conditions used to justify extension of AOTs and STIs for the RBM functions in Reference 4 and is implemented consistent with Reference 12, Section 3.3.2.1 Conditions A and B.
- iii. Proposed Note 12 does not require that the operable RBM channels be functionally tested immediately and daily thereafter. This change acknowledges that the inoperability of a subsystem is not automatically indicative of a similar condition in the redundant subsystem unless a generic failure is suspected. This change is justified because it: allows credit to be taken for normal periodic Surveillances as a sufficient demonstration of Operability; recognizes that functional capability is maintained by the remaining components and the reduction in redundancy will be of limited duration; reduces unnecessary challenges and wear to redundant components; recognizes that testing of redundant channels does not make those channels more reliable; incorporates operating experience and analysis (Reference 4) that have demonstrated the normal STI is sufficient to provide a very high degree of reliability of an instrument channel. This change is consistent with the assumptions and conditions used to justify extension of AOTs and STIs for the RBM functions in Reference 4 and is implemented consistent with Reference 12, Section 3.3.2.1 Conditions A and B.
- iv. Proposed Note 12 requires that "With 2 RBM channels inoperable, place one RBM channel in trip within 1 hour." Placing either of the two channels in trip actuates a control rod block and satisfies the safety function of this instrument. This proposed change was added to prevent an extended loss of function since a loss of function was not considered in Reference 4. This is consistent with the existing requirement in Table 3.2.C, Note 1, i.e., if there is an inoperable channel in both trip systems, then both trip systems must be tripped immediately. This change is administrative and is made to keep the PBAPS TS consistent with Reference 12, Section 3.3.2.1 Condition B.
- f. Addition of proposed Table 3.2.C, Note 13: As discussed above in Section C.4.b.ii, existing LCO 3.3.B.5 does not allow operation with an inoperable RBM channel during operation with a limiting control rod pattern. Proposed Note 13 provides a cross reference from Table 3.2.C to existing LCO 3.3.B.5. This cross Reference is necessary because existing TS Section 3.3.B.5 supersedes the LCO and Applicability requirements of TS Section 3.2.C by requiring that both channels (i.e., both trip systems because there is only one channel per trip system for the RBM function) must be Operable,

"During operation with limiting control rod patterns, as determined by qualified personnel." This is an administrative change because there are no technical changes (either actual or interpretational) to the Technical Specifications.

- g. Addition of proposed Table 3.2.C, Note 14: A new note was added to provide clarification concerning implementation of required actions. The note will allow initiation of required actions to be delayed for up to 6 hours when a channel is placed in an inoperable status solely for performance of required Surveillances, provided the associated trip function maintains control rod block capability. This note is applicable to the APRM and RBM rod block functions and is justified based on the analysis in Reference 4 and, for the RBM function, is consistent with Reference 12. The APRM rod block functions are not included in Reference 12.
- h. Addition of proposed Table 3.2.C, Note 15: Proposed Note 15 will be added to Table 3.2.C indicating that there is only one Trip system associated with the control rod block actuated by the Scram Discharge Instrument Volume High Level. This change is necessary because proposed LCO 3.2.C states "there shall be two Operable or tripped trip systems for each Trip Function except as noted in Table 3.2.C." This is an administrative change because there are no changes to the existing TS requirements.
- i. Proposed change to Table 4.2.C: The minimum frequency specified for the performance of Instrument Channel Functional Tests is extended from once per month to once every 3 months for the following control rod block instruments: APRM - Downscale; APRM - Upscale; RBM - Downscale; and, RBM - Upscale. These changes to the STI for Instrument Channel Functional Tests are justified by Reference 4 and the change is consistent with Reference 12.
- j. Proposed change to Notes for Tables 4.2.A through 4.2.F: Note 1 of the combined Notes for Tables 4.2.A through 4.2.F and References to Note 1 on Table 4.2.C were deleted. Note 1 states that frequency of performance for functional tests is "Initially once every month" but that the frequency could be changed based on failure rate data if the proposed change and supporting failure rate data was reviewed and approved by the AEC. References 1 through 10 constitute the review and approval of failure rate data and provide the justification for extending functional test intervals from once per month to once every 3 months. The requirements for extending instrumentation functional test frequency beyond the currently existing interval that Note 1 identifies are satisfied by this TSCR; therefore, Note 1 is no longer applicable. Deletion of Note 1 for Tables 4.2.A through 4.2.F and References to Note 1 on Table 4.2.A is an administrative change.
- k. The Bases for TS Section 3/4.2.C were revised as shown in Attachment 11 to reflect the changes discussed above or to correct typographical errors.

C.5. Radiation Monitoring Systems (TS 3.2.D)

The changes proposed for PBAPS TS Section 3.2.D, Radiation Monitoring Systems, are shown in Attachment 7 and described below.

- a. The proposed change deletes the existing statements of Applicability and the Objective for Section 3.2, Protective Instrumentation (TS 3/4.2), because these statements, as currently written, do not establish any requirements. The proposed change establishes

for each separate category of protective instrumentation, concise and complete statements of the LCO and Applicability which are consistent with Reference 12. For TS Section 3.2.D, Radiation Monitoring Systems, the proposed change creates separate statements for the LCO and Applicability as follows:

- i. The proposed LCO 3.2.D establishes, under an appropriate heading, an Applicability requirement for LCO 3.2.D by relocating, from Table 3.2.D, Notes 1 and 3, existing requirements that: Refuel Area Exhaust Monitors and Reactor Building Area Exhaust Monitors shall be Operable whenever the associated systems are required to be Operable; and, the Main Stack Monitor shall be Operable whenever the containment is purging and primary containment integrity is required.
- ii. The proposed LCO 3.2.D clarifies the existing LCO requirement concerning the number of required trip systems by adding the statement that there shall be two Operable or tripped trip systems for each function listed in Table 3.2.D.

Each of the changes listed above is an administrative change because there are no technical changes (either actual or interpretational) to the Technical Specifications. These changes improve clarity and/or establish the numbering and format necessary to support technical changes discussed elsewhere. To the maximum extent practical, these changes are consistent with Reference 12.

- b. Proposed LCO 3.2.D contains a new heading, "Conditions and Required Actions." The conditions and required actions for inoperable channels, currently in Table 3.2.D, Notes 1 and 3, were incorporated into the Specification as 3.2.D. The conditions, required actions, and completion times were modified as described below in paragraphs C.5.c through C.5.f to satisfy the assumptions and conditions in Reference 6 which were used to justify extension of AOTs and STIs for Radiation Monitoring Instrumentation that actuate containment isolation. To the maximum extent practical, the proposed conditions, required actions, and completion times are consistent with Reference 12, as follows: Sections 3.3.6.1, Primary Containment Isolation Instrumentation, Conditions A, B, C and F for the Main Stack Monitor; and, Sections 3.3.6.2, Secondary Containment Isolation Instrumentation, Conditions A, B and C for the Refuel Area Exhaust Monitors and Reactor Building Exhaust Monitors.
- c. Proposed LCO 3.2.D, Condition 1: The condition and required action currently in Table 3.2.D, Note 1, "the specified number of instrument channels shall be operable or placed in the tripped condition" was relocated to Condition 1 and modified as follows:
 - i. The proposed condition description clarifies that the condition could be simultaneously applied to more than one trip function and more than one trip system within a trip function by changing the wording to "With one or more channel(s) required by Table 3.2.D inoperable in one or more Trip Functions." This change is consistent with Reference 12, Section 3.3.6.1.A and the associated Note allowing separate condition entry.

- ii. The repair AOT for an inoperable channel currently in Table 3.2.D, Note 1, was extended from immediately (interpreted as within one hour) to within 24 hours. The AOTs specified for each PCI instrument function are based on the analyses in References 5 and 6. The condition description, required actions and completion time are consistent with Reference 12.

Proposed condition 1 and the associated required action and completion time are consistent with Reference 12, Sections 3.3.6.1 and 3.3.6.2, Primary and Secondary Containment Isolation Instrumentation, Condition A.

- d. Proposed LCO 3.2.D, Condition 2: A new condition, "With one or more automatic functions with containment isolation capability not maintained" was established. This condition will have Required Actions that will restore containment isolation capability within one hour. This new condition and required action is necessary because the analyses in Reference 6 did not consider that extending the AOT could result in an extended loss of trip capability and Reference 6 was used to justify extending AOTs (proposed LCO 3.2.D, Condition 1) for an inoperable channel. Proposed condition 1 and the associated required action and completion time are consistent with Reference 12, Sections 3.3.6.1 and 3.3.6.2, Primary and Secondary Containment Isolation Instrumentation, Condition B.
- e. Proposed LCO 3.2.D, Condition 3: This change clarifies and incorporates into the LCO the requirement currently located in Table 3.2.D, Note 2, that specific actions be performed whenever the required actions and completion times of proposed conditions 1 or 2 cannot be met. The required actions specified by proposed Condition 3 are still located in Table 3.2.A (Note 2, Actions A, B, and C) and were not modified. The required actions and completion times in proposed condition 3 and Table 3.2.D, Note 2, are consistent with Reference 12, Sections 3.3.6.1 and 3.3.6.2, Primary and Secondary Containment Isolation Instrumentation, Condition C.
- f. Proposed LCO 3.2.D, Conditions and Required Actions: Two new notes were added to provide clarification concerning implementation of required actions. The first note will allow initiation of required actions to be delayed for up to 6 hours when a channel is placed in an inoperable status solely for performance of required Surveillances, provided the associated Trip Function maintains isolation capability. The second note provides clarification that an inoperable channel or trip system need not be placed in the tripped condition where this would cause the Trip Function to occur. In these cases, if the inoperable channel is not restored to Operable status within the required time, the Action required by Table 3.2.D for that trip Function shall be taken. Both notes are justified based on Reference 6 and are consistent with Reference 12.
- g. Proposed change to Table 3.2.D, Notes 1, 2, 3 and 4: As discussed in Sections C.5.a and C.5.b, the proposed LCO 3.2.D contains applicability requirements and required actions that were relocated from Table 3.2.D, Note 1. Therefore, existing Notes 1 and 3 and References to existing Notes 1 and 3 on Table 3.2.D are deleted. Therefore, existing Table 3.2.D, Note 2 Action, and the Reference to Note 2 in Table 3.2.D will be renumbered as Note 1. Existing Note 4 and the Reference to Note 4 in Table 3.2.D will be renumbered as Note 2. These are administrative changes because existing requirements were relocated with no technical changes to the Technical Specifications.

- h. Proposed change to Table 4.2.D: The minimum frequency specified for the performance of Instrument Channel Functional Tests is extended from once per month to once every 3 months for the Refuel Area Exhaust Monitors and Reactor Building Area Monitors. These changes to the STI for Instrument Channel Functional Tests is justified by Reference 6 and the change is consistent with Reference 12.
- i. Proposed change to Specification 3/4.2.D.2: The proposed change to Section 3.2, Protective Instrumentation, requires that TS Section 3/4.2.D.2, Main Control Room, be moved from existing page 59 to a new page numbered 59a. The numbering of Notes associated with TS Section 3/4.2.D.2 on Table 3.2.D were changed to support other changes on Table 3.2.D which are described above. Each of the changes is an administrative change because there are no technical changes (either actual or interpretational) to the Technical Specifications. These changes are necessary to support technical changes discussed elsewhere.
- j. The Bases for TS Section 3/4.2.D were revised as shown in Attachment 11 to reflect the changes discussed above or to correct typographical errors.

C.6. Leak Detection (TS 3.2.E)

The changes proposed for PBAPS TS Section 3.2.E, Drywell Leak Detection, are shown in Attachment 2 and described below.

- a. The proposed change deletes the existing statements of Applicability and the Objective for Section 3.2, Protective Instrumentation (TS 3/4.2), because these statements, as currently written, do not establish any requirements. For TS Section 3.2.E, no changes were made to the existing requirements.
- b. The proposed change to Section 3.2, Protective Instrumentation, requires that TS Sections 3.2.E and 4.2.E, Drywell Leak Detection, be moved from existing page 59 to a new page numbered 59a.
- c. Table 4.2.E was modified to delete the references to Note 1 but the Channel Functional Test frequency was maintained as once per month consistent with current requirements.

Each of the changes listed above is an administrative change because there are no technical changes (either actual or interpretational) to the Technical Specifications. These changes are necessary to support technical changes discussed elsewhere.

C.7. Surveillance Information Readouts (TS 3.2.F)

The changes proposed for PBAPS TS Section 3.2.F, Surveillance Information Readouts, are shown in Attachment 8 and described below.

- a. The proposed change deletes the existing statements of Applicability and the Objective for Section 3.2, Protective Instrumentation (TS 3/4.2), because these statements, as currently written, do not establish any requirements. For TS Section 3.2.F, no changes were made to the existing requirements.

- b. The proposed change to Section 3.2, Protective Instrumentation, requires that TS Sections 3.2.F and 4.2.F, Surveillance Information Readouts, be moved from existing page 60 to a new page numbered 59a.

Each of the changes listed above is an administrative change because there are no technical changes (either actual or interpretational) to the Technical Specifications. These changes are necessary to support technical changes discussed elsewhere.

C.8. Alternate Rod Insertion (ARI) and Recirculation Pump Trip (RPT) (TS 3.2.G)

The changes proposed for PBAPS TS Section 3.2.G, Alternate Rod Insertion and Recirculation Pump Trip, are shown in Attachment 9 and described below.

- a. The proposed change deletes the existing statements of Applicability and Objective for Section 3.2, Protective Instrumentation (TS 3/4.2), because these statements, as currently written, do not establish any requirements. The proposed change establishes for each separate category of protective instrumentation, concise and complete statements of the LCO and Applicability which are consistent with Reference 12. For TS Section 3.2.G, the LCO and Applicability were established as follows:
 - i. The proposed LCO 3.2.G retains, under an appropriate heading, the existing Applicability requirement that ARI and RPT shall be Operable "when the Reactor Mode Switch is in the Startup or Run positions."
 - ii. The proposed LCO 3.2.G retains the existing LCO requirement that two trip systems, including the manual and automatic actuation logic and actuation devices of both trip systems, must be operable.

Each of the changes listed above is an administrative change because there are no technical changes (either actual or interpretational) to the Technical Specifications. These changes improve clarity and/or establish the numbering and format necessary to support technical changes discussed elsewhere. To the maximum extent practical, these changes are consistent with Reference 12.

- b. Proposed change to Table 3.2.G: Proposed LCO 3.2.G and proposed changes to Table 3.2.G will increase minimum number of Operable channels per trip system from one channel per trip system to two channels per trip system for both the reactor high pressure function and the reactor low-low water level function. This change is required to satisfy the assumptions used in Reference 7 which justified the ARI and RPT AOTs and STIs by assuming no loss of trip capability during the period that an inoperable channel is not in trip.

Reference 7 evaluated two different Anticipated Transient Without Scram (ATWS)/RPT logic designs: one out-of-two twice for each ATWS function (reactor high pressure and reactor low-low water level); and, two out-of-two twice for each ATWS function. The PBAPS ATWS/RPT logic, approved by the NRC in Amendment 141 dated March 22, 1989, uses a one out-of-four taken twice logic with the four channels consisting of two channels of the high reactor pressure function and two channels of the reactor low-low water level function. Existing Table 3.2.G requires only one of the two channels of each function to be operable in each trip system. In order for the generic analysis in

Reference 7 to envelope the PBAPS design without additional analysis, the PBAPS Technical Specifications must be amended to require both channels of each function (level and pressure) to be operable in both trip systems. This change will make the PBAPS design consistent with and more conservative than the one out-of-two twice design analyzed in Reference 7 and the change is more conservative than the existing requirements. This change is consistent with Reference 12.

- c. Proposed LCO 3.2.G contains a new heading, "Conditions and Required Actions." The conditions and required actions for inoperable channels, currently in Table 3.2.G, Notes 1, 2, 3 and 4, were deleted and replaced with conditions and required actions consistent with NUREG-1433, LCO 3.3.4.2, ATWS-RPT instrumentation. The proposed conditions, required actions and completion times adopt the AOTs from NUREG-0123, and then add the extended AOTs justified in Reference 7. This combination of changes is consistent with NUREG-1433 and satisfies the assumptions used in the justification of extensions of AOTs and STIs for instrumentation that provide ATWS-RPT functions. The proposed conditions, required actions, and completion times are more conservative than the existing requirements because: the change eliminates Table 3.4.G, Notes 3 and 4, which allow operation to continue for 48 hours (plus an additional 8 hours to reach the Shutdown or Refuel Mode) with a complete loss of one or both ATWS-RPT functions; and, eliminates current requirements that allow operation to continue indefinitely with a loss of single failure tolerance.

TS Section 3.2.G includes an ATWS/Alternate Rod Insertion (ATWS/ARI) function that is no longer included in BWR Standard Technical Specifications and, therefore, was not evaluated in Reference 7 or included in NUREG-1433. The PECO Energy evaluation of Reference 7 determined that the justification for AOT and STI extensions for ATWS/RPT is applicable to ATWS/ARI because this function uses the same instruments and logic used for the ATWS/RPT function. The only difference between the two functions is the device being actuated, and the actuated device is not included in the generic analysis in Reference 7. Therefore, proposed changes to ATWS-RPT which are being made consistent with NUREG-1433 and Reference 7 are also being applied to the ATWS/ARI function. This change is conservative because the proposed changes, discussed below, require the operability of an additional channel per trip system and do not permit an extended loss of function as is allowed in the existing TS.

- d. Proposed LCO 3.2.G, Condition 1: Proposed Condition 1 specifies that "With one or more channels required by Table 3.2.G inoperable, restore the channel to Operable status or place channel in trip within 14 days." This change, when taken in conjunction with the proposed change that requires two operable channels per function (pressure and level) per trip system, will limit the amount of time the ARI/RPT system can be considered operable without being single failure proof for each function to a maximum of 14 days. Existing Table 3.2.G, by requiring only one operable channel per function per trip system, does not require any allowance for single failure within a function. Therefore, this change is more conservative. Proposed condition 1 and the associated required action and completion time satisfy the assumptions used to demonstrate system reliability in Reference 7 and are consistent with Reference 12, Section 3.3.4.2, (ATWS-RPT), Condition A. This change is applicable to both the RPT and ARI functions.

- e. Proposed LCO 3.2.G, Condition 2: Proposed Condition 2 specifies that "With one instrument function with trip capability not maintained, restore trip capability within 72 hours." This change, when taken in conjunction with the proposed change that requires two operable channels per function (pressure and level) per trip system, will limit the amount of time the ARI/RPT system can be considered operable with the ability to trip on only one function (level or pressure) to 72 hours. Existing Table 3.2.G, Notes 1, 2 and 3, allow a similar condition to exist for only 48 hours before reactor shutdown is required. However, proposed condition 2 and the associated required action and completion time satisfy the assumptions used to demonstrate system reliability in Reference 7 and are consistent with Reference 12, Section 3.3.4.2, (ATWS-RPT), Condition B. This change is applicable to both the RPT and ARI functions.
- f. Proposed LCO 3.2.G, Condition 3: Proposed Condition 3 specifies that "With both instrument functions or an actuation device with trip capability not maintained, restore trip capability for one function within 1 hour." This change, in conjunction with proposed condition 4, requires the initiation of a reactor shutdown within 1 hour of the discovery of a loss of ARI/RPT function. The existing requirements (Table 3.2.G, Notes 3 and 4) allow operation to continue for 48 hours (plus an additional 8 hours to reach the Shutdown or Refuel Mode) with a complete loss of one or both ATWS-RPT functions. Proposed condition 3 and the associated required action and completion time satisfy the assumptions used to demonstrate system reliability in Reference 7 and are consistent with Reference 12, Section 3.3.4.2, (ATWS-RPT), Condition C. This change is applicable to both the RPT and ARI functions.
- g. Proposed LCO 3.2.G, Condition 4: Proposed Condition 4 specifies that "If the required actions and associated completion times of Action 1, 2 or 3 are not met, place the reactor in shutdown or refuel mode within 8 hours." Proposed Condition 4 is consistent with the existing requirement in Table 3.2.G, Note 4. The proposed change is similar to Reference 12, Section 3.3.4.2, (ATWS-RPT), Condition D, because both require that the reactor be placed outside the applicable mode within a short period of time. In Reference 12, this is satisfied by being in Mode 2 within 6 hours; in the proposed change, this is satisfied by being in shutdown or refuel mode within 8 hours. Proposed condition 4 and the associated required action and completion time satisfy the assumptions used to demonstrate system reliability in Reference 7.
- h. Proposed LCO 3.2.G, Conditions and Required Actions: Three new notes were added to provide clarification concerning implementation of required actions. The first note will allow initiation of required actions to be delayed for up to 6 hours when a channel is placed in an inoperable status solely for performance of required Surveillances, provided the associated Trip Function maintains ARI/RPT trip capability. The second note provides clarification that an inoperable channel or trip system need not be placed in the tripped condition where this would cause the Trip Function to occur. In these cases, if the inoperable channel is not restored to Operable status within the required time, the Action required by LCO 3.2.G, Condition 4, shall be taken. The third note, consistent with the requirements of Reference 12, specifies that placing an inoperable instrument channel in trip is not applicable if the inoperable channel is the result of an inoperable breaker. These notes are justified based on Reference 7 and are consistent with Reference 12.

- i. Proposed change to Table 4.2.G: The minimum frequency specified for the performance of Instrument Channel Functional Tests is extended from once per month to once every 3 months for the Reactor High Pressure and Reactor Low-Low Water Level functions. As noted on Table 4.2.D, these instrument channels are the same ones used by the Core and Containment Cooling Systems. These changes to the STI for Instrument Channel Functional Tests are justified by Reference 7 and the change is consistent with Reference 12.
- j. The Bases for TS Section 3/4.2.G were revised as shown in Attachment 11 to reflect the changes discussed above or to correct typographical errors.

D. Information Supporting a Finding of No Significant Hazards Consideration

PECO Energy has evaluated the changes proposed by TSCR 90-03 and has determined that the proposed changes to the PBAPS Technical Specifications which extend STIs and AOTs for actuation instrumentation do not involve a Significant Hazards Consideration. This determination has been performed in accordance with the criteria set forth in 10CFR50.92. The following evaluation is provided for the three categories of the significant hazards consideration standards:

- 1) The proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed TS changes increase the STIs and AOTs for actuation instrumentation based on analyses described and justified in Licensing Topical Reports (References 2 through 8) which have been evaluated in associated Safety Evaluation Reports. These changes were incorporated into PBAPS Technical Specifications consistent with NUREG-1433. TS requirements that govern Operability or routine testing of plant instruments are not assumed to be initiators of any analyzed event because these instruments are intended to prevent, detect or mitigate accidents. Therefore, these changes will not involve an increase in the probability of occurrence of an accident previously evaluated. Additionally, these changes will not increase the consequences of an accident previously evaluated because the proposed change will not involve any physical changes to plant systems, structures, or components (SSC), or the manner in which these SSC are operated, maintained, modified, or inspected. The changes will not alter the operation of equipment assumed to be available for the mitigation of accidents or transients by the plant safety analysis or licensing basis. As justified in References 1 through 8, the proposed changes establish or maintain adequate assurance that components are operable when necessary for the prevention or mitigation of accidents or transients and that plant variables are maintained within limits necessary to satisfy the assumptions for initial conditions in the safety analyses. These changes establish or modify time limits allowed for operation with inoperable instrument channels based on the analyses in References 1 through 8 and will not allow continuous plant operation with plant conditions such that a single failure will result in a loss of any safety function. Therefore, these changes will not increase the consequences of an accident previously evaluated.

- 2) The proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

These proposed changes will not involve any physical changes to SSC, or the manner in which these SSC are operated, maintained, modified, tested, or inspected. Therefore, these changes will not create the possibility of a new or different kind of accident from any accident previously evaluated. The changes in methods governing normal plant operation are consistent with the current safety analysis assumptions. Therefore, these changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

- 3) The proposed changes do not involve a significant reduction in a margin of safety.

The proposed TS changes increase the STIs and AOTs for actuation instrumentation based on analyses described and justified in Licensing Topical Reports (References 2 through 8) which have been evaluated in associated Safety Evaluation Reports. These changes were incorporated into PBAPS Technical Specifications consistent with NUREG-1433. These changes can be classified into one of the following three categories:

- a. Changes to the minimum STIs and AOTs for the testing and/or repair of instrumentation based on the results of generic analyses in References 1 through 8;
- b. Changes to conditions, required actions, and completion times needed to make PBAPS TS requirements consistent with the assumptions used in the analyses in References 1 through 8; and,
- c. Changes that reformat, renumber, and/or reword existing requirements to incorporate the changes above.

All of the proposed changes will be incorporated into the PBAPS custom Technical Specifications using the same approach and specific requirements used in Reference 12.

There is no significant reduction in the margin of safety resulting from changes to the STIs and AOTs for the testing and/or repair of instrumentation based on the results of the analyses in References 1 through 8. These analyses determined that there is no significant change in the availability and/or reliability of instrumentation as a result of this change in STIs and AOTs. PECO Energy performed reviews that confirmed these analyses are applicable to PBAPS and that there would be no effect on the identification of excessive instrument setpoint drift as a result of increasing from monthly to quarterly the minimum interval between instrument functional tests. The proposed required actions ensure that actions to mitigate loss of single failure tolerance is initiated within 24 hours (12 hours for RPS) in accordance with the results of the analyses in References 1 through 8 and action to mitigate a loss of instrument function is initiated within 1 hour.

The proposed changes which replace the shutdown actions associated with inoperable instrumentation with actions to declare the supported system inoperable does not involve a reduction in a margin of safety. The proposed changes ensure that appropriate compensatory measures are taken commensurate with approved TS Actions for the affected systems and the safety analyses. In addition, the proposed changes provide the benefit of avoiding an unnecessary shutdown transient when appropriate measures are available to compensate for the inoperable instrumentation.

There is no significant reduction in the margin of safety resulting from changes that reformat, renumber, and/or reword existing requirements to incorporate the changes above.

E. Information Supporting an Environmental Assessment

An environmental impact assessment is not required for the changes proposed by this Application because the changes conform to the criteria for "actions eligible for categorical exclusion" as provided for under 10CFR51.22(c)(9). The requested changes will have no impact on the environment. The proposed changes do not involve a Significant Hazards Consideration as discussed in the proceeding section. The proposed changes do not involve a significant change in the types or significant increase in the amounts of any effluents that may be released offsite. The proposed changes would not authorize any change in the authorized power level of the facility. In addition, the proposed changes do not involve a significant increase in individual or cumulative occupation radiation exposure.

F. CONCLUSION

The Plant Operations Review Committee and the Nuclear Review Board have reviewed these proposed changes and have concluded that they do not involve an unreviewed safety question and are not a threat to the health and safety of the public.

List of Attachments

- Attachment 1: "Technical Specification Improvement Analysis for the Reactor Protection System for Peach Bottom Atomic Power Station, Units 2 and 3," General Electric Company, MDE 87-0485-1 (DRF A00-02119-D), October 1987.
- Attachment 2: "Technical Specification Improvement Analysis for the Emergency Core Cooling System Actuation Instrumentation for Peach Bottom Atomic Power Station, Units 2 and 3," General Electric Company, RE-020 (DRF A00-02558E), December 1986.
- Attachment 3: TS 3.1 (Markup of Changes) (Units 2&3)
- Attachment 4: TS 3.2.A (Markup of Changes) (Units 2&3)
- Attachment 5: TS 3.2.B (Markup of Changes) (Units 2&3)
- Attachment 6: TS 3.2.C (Markup of Changes) (Units 2&3)
- Attachment 7: TS 3.2.D (Markup of Changes) (Units 2&3)
- Attachment 8: TS 3.2.E and 3.2.F (Markup of Changes)(Units 2&3)
- Attachment 9: TS 3.2.G (Markup of Changes) (Units 2&3)
- Attachment 10: Bases for TS 3.1, Reactor Protection System (Units 2&3)
- Attachment 11: Bases for TS 3.2.A through 3.2.G, Protective Instrumentation (Units 2 & 3)
- Attachment 12: Re-typed replacement pages for all pages affected by TSCR 90-03

REFERENCES

1. S. Visweswaran, et al., "BWR Owners' Group Response to NRC Generic Letter 83-28, Item 4.5.3," General Electric Company, NEDC-30844A, March 1988.
2. W. P. Sullivan, et al., "Technical Specification Improvement Analyses for PWR Reactor Protection System," General Electric Company, NEDC-30851P-A, March 1988.
3. D. B. Atcheson, et al., "BWR Owners' Group Technical Specification Improvement Methodology with Demonstration for BWR ECCS Actuation Instrumentation," Parts 1 and 2, General Electric Company, NEDC-30936P-A, December 1988.
4. S. Visweswaran, et al., "Technical Specification Improvement Analysis for BWR Control Rod Block Instrumentation," General Electric Company, NEDC-30851P-A, Supplement 1, October 1988.
5. L. G. Frederick, et al., "Technical Specification Improvement Analysis for BWR Isolation Instrumentation Common to RPS and ECCS Instrumentation," General Electric Company, NEDC-30851P-A, Supplement 2, March 1989.
6. W. P. Sullivan, et al., "Technical Specification Improvement Analyses for BWR Isolation Actuation Instrumentation," General Electric Company, NEDC-31677P-A, July 1988.
7. "Bases for Changes to Surveillance Test Intervals and Allowed Out-of-Service Times for Selected Instrumentation Technical Specifications," General Electric Company, GENE-770-06-1, April 1992. (SER dated July 21, 1992)
8. "Bases for Changes to Surveillance Test Intervals and Allowed Out-of-Service Times for Selected Instrumentation Technical Specifications," General Electric Company, GENE-770-06-2, December 1992.
9. "Technical Specification Improvement Analysis for the Reactor Protection System for Peach Bottom Atomic Power Station, Units 2 and 3," General Electric Company, MDE-87-0485-1 (DRF A00-02119-D), October 1987.
10. "Technical Specification Improvement Analysis for the Emergency Core Cooling System Actuation Instrumentation for Peach Bottom Atomic Power Station, Units 2 and 3," General Electric Company, RE-020 (DRF A00-02558E), December 1986.
11. C. E. Rossi, NRC, to R. F. Janacek, BWROG, "Staff Guidance for Licensee Determination that the Drift Characteristics for Instrumentation Used in RPS Channels are Bounded by NEDC-30851P Assumptions when the Functional Test Interval is Extended from Monthly to Quarterly," April 27, 1988.
12. NUREG-1433, "Standard Technical Specifications, General Electric Plants BWR/4," Revision 0, September 1992.
13. BWR Owners' Group (BWROG-92102) to B. K. Grimes, NRC, "BWR Owners' Group (BWROG) Topical Reports on Technical Specification Improvement Analysis for BWR Reactor Protection Systems - (Use for Relay and Solid State Plants (NEDC-30844 and NEDC-30851P), November 4, 1992.