



**CENTERIOR  
ENERGY**

**PERRY NUCLEAR POWER PLANT**

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**Robert A. Siratman**  
VICE PRESIDENT - NUCLEAR

February 22, 1994  
PY-CEI/NRR-1694 L

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D. C. 20555

Perry Nuclear Power Plant  
Docket No. 50-440  
Supplement to Technical Specification  
Change Request: Increase Surveillance  
Test Intervals and Allowable Outage  
Times for Instrumentation (TAC M84057)

Gentlemen:

Enclosed is a supplement to the License Amendment Request submitted on June 29, 1992 (letter PY-CEI/NRR-1496L) for the Perry Nuclear Power Plant (PNPP) Unit 1, Facility Operating License NPF-58.

The June 29, 1992 Amendment request included proposals to extend the allowable outage times (AOTs) for surveillance testing and repairs on various instruments. This supplement proposes changes to preclude extended, uncompensated "loss-of-function" situations during such instrument repair and surveillance test allowable outage times.

Attachment 1 to this letter contains an Introduction, Safety Analysis, and a Summary. Attachment 2 contains marked up copies of the Technical Specification pages which were submitted with the June 29, 1992 letter (PY-CEI/NRR-1496L). Attachment 3 provides a Significant Hazards Consideration which addresses this supplemental Technical Specification change proposal. The previous June 29, 1992 Significant Hazards Consideration remains valid; this supplemental Consideration only provides analysis of the proposed rewording of the notes and selected Actions to address possible loss-of-function situations.

The Environmental Consideration in the June 29, 1992 letter fully bounds all the changes proposed in this supplement. Therefore, it is not reproduced herein.

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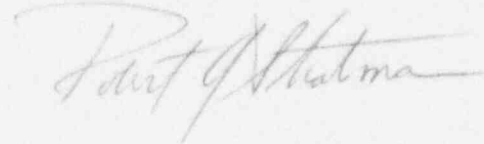
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PY-CEI/NRR-1694 L  
February 22, 1994

If you have questions or require additional information, please contact Henry Hegrat - Regulatory Affairs, at (216) 280-5606.

Very truly yours,

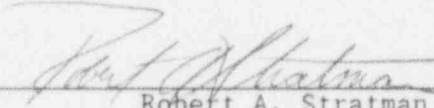


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Attachments

cc: NRC Project Manager  
NRC Resident Inspector Office  
NRC Region III  
State of Ohio

I, Robert A. Stratman, being duly sworn state that (1) I am Vice President, Nuclear - Perry of the Centerior Service Company, (2) I am duly authorized to execute and file this certification on behalf of The Cleveland Electric Illuminating Company and Toledo Edison Company, and as the duly authorized agent for Duquesne Light Company, Ohio Edison Company, and Pennsylvania Power Company, and (3) the statements set forth herein are true and correct to the best of my knowledge, information and belief.

  
Robert A. Stratman

Sworn to and subscribed before me, this 22nd day of February,  
1994.

Cynthia Branson Kaudiat

My commission expires  
31.4.95.

## INTRODUCTION

A June 29, 1992 amendment request letter contained numerous changes to the Instrumentation Technical Specifications based on topical reports performed by General Electric for the BWR Owner's Group. These topical reports had been submitted to the NRC Staff for their review. In June 1992, all but one of the topical reports had been reviewed by the NRC Staff with Safety Evaluation Reports (SERs) issued accepting the reports and the changes recommended by these topicals. The final NRC SER, on Topical Report GENE-770-06-1 "Bases for Changes to Surveillance Test Intervals and Allowed Out-of-Service Times for Selected Instrumentation Specifications" has since been issued, by letter from C. E. Rossi (NRC) to R. D. Binz (BWROG) dated July 21, 1992. The SERs contained conditions for utilities to meet if the utilities wished to use the topicals/NRC SERs to make the recommended changes at their specific facilities. The June 29, 1992 letter contained PNPPs submittal to incorporate the vast majority of the recommended changes, and explained PNPPs position on how the NRC SER conditions were being met. That submittal, and the information contained therein, is still considered applicable.

However, certain additional changes have since been identified as being necessary, and are being addressed by this supplemental amendment request letter. During the individual plant reviews for implementation of the Topical Reports, it was determined that "loss-of-function" situations could occur during the extended "surveillance test performance" allowable outage times (AOTs) (2 hours → 6 hours) and the extended "instrument repair" AOTs (1 hour → 12 hours or 24 hours) if multiple instruments should happen to be inoperable and not placed in the tripped condition, i.e., the associated Function (e.g. Drywell Pressure-High) could be temporarily unable to complete its safety-related purpose (e.g. reactor scram or isolation of a containment penetration). This amendment request resolves these "loss-of-function" issues in a manner consistent with the Improved Standard Technical Specifications (NUREG-1434). The first part of this attachment to the letter discusses the changes to address loss-of-function during the repair AOT, and the second half addresses loss-of-function during the surveillance test performance AOTs.

## SAFETY ANALYSIS

### 1. Loss-of-Function During Repair Allowable Outage Times

The changes to "repair" AOTs, as provided in the BWROG Topical Reports and as generically approved by the NRC, would allow (with certain instrument channels inoperable) a plant configuration to exist which does not have the capability to automatically actuate the respective system/valve(s) for a period of up to 24 hours. This "loss-of-function" concern had originally been identified during the NRC review of proposed changes to individual plants' TS to implement the BWROG Topical Report on RPS. At that time, the NRC had identified the potential for a loss of RPS scram capability to exist for up to 12 hours without any compensatory actions required, based on the original wording of the BWROG proposed changes to the Action Statements for the RPS Specification. The NRC concluded that permitting such a "loss-of-function" condition to exist

for such a period of time without compensatory actions was unacceptable, and that this issue must be resolved prior to further approval of proposed changes to RPS repair AOTs on individual plants' dockets. As identified in our June 29, 1992 amendment request (reference pages 5 and 6 of Attachment 1 to letter PY-CEI/NRR-1496L), this RPS loss-of-function issue has already been resolved through the RPS LCO and Actions that were proposed in that June 1992 letter.

Subsequently, during the development of the Improved Standard Technical Specifications (ITS) (NUREG-1434), loss-of-function for the Specifications other than RPS was an issue that was specifically addressed. As a result, the Action Statements in NUREG-1434 for instrumentation that provides an automatic actuation function contain checks to ensure that a loss-of-function condition does not exist. NUREG-1434 was issued by the NRC for implementation by utilities on September 29, 1992.

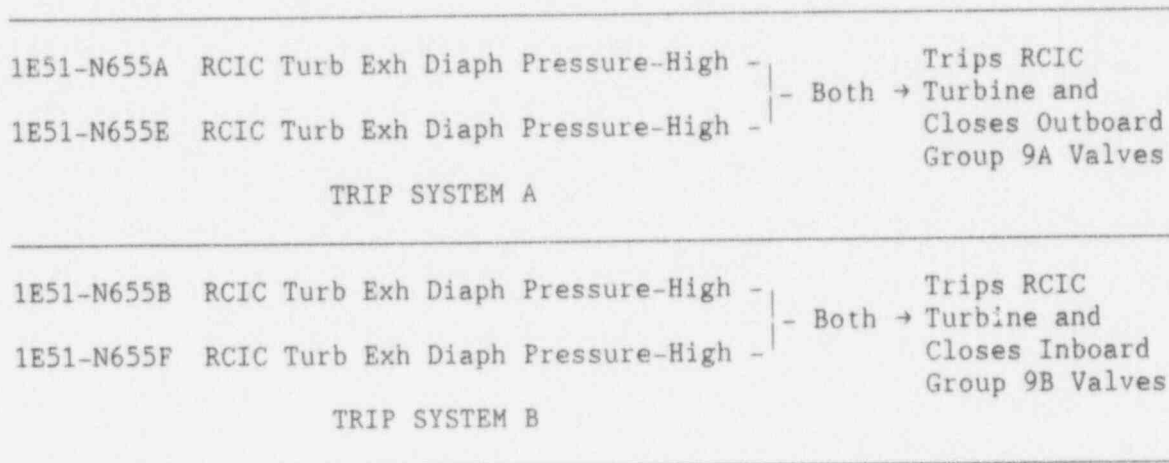
During plant-specific reviews of licensee amendment requests performed after issuance of NUREG-1434, the NRC has stated that the repair AOT changes proposed by the Topical Reports for the Specifications other than RPS are not acceptable, because the associated Action Statements do not contain checks (as contained in NUREG-1434) to ensure that a loss-of-function condition does not exist during the extended repair period. As a result, this letter provides the results of a review of each of the repair AOT changes proposed in the June 29, 1992 amendment request, in order to identify where loss-of-function conditions may be permitted to exist for more than one hour. The results of that review and the necessary changes to the previous amendment request are presented below, after a short explanation of the concept of "loss-of-function".

The term "Function" utilized here refers to a component or system level action that occurs as a result of a particular instrumentation signal (e.g. reactor scram from high neutron flux; containment penetration isolation from high drywell pressure, End-of-Cycle Recirculation Pump Trip from a "Turbine Control Valve - Fast Closure" signal, etc.). These Functions are typically designated as a separate line item in the Technical Specification Instrumentation Tables (e.g. Table 3.3.1-1 Item 1.a, Table 3.3.2-1 Item 1.b, Table 3.3.4.2-1 Item 2, etc.). Although the existing Tables to which this note applies are inconsistent in how they refer to the line items (the RPS and RCIC Tables call them "Functional Units," while the other Tables call them "Trip Functions,") this letter will consistently refer to them as "Functions." However, The Technical Specification markups will continue to utilize the "Functional Unit" and "Trip Function" terms, in order to minimize the number of changes to the current Technical Specifications.

The loss of function concern discussed above could be experienced, for example, during repairs of instruments for a Function which has a logic configuration consisting of two trip systems, each of which has a two out of two logic. If one of the instruments in one trip system is inoperable, the logic for that trip system cannot be completed since both

instruments are required to operate, and if the other trip system that provides the same Function also contains one inoperable instrument, a "monitoring" capability is still maintained in both trip systems, but the capability to perform the Function has been lost (see Figure 1).

FIGURE 1



Using the previously proposed Action statements (from the June 29, 1992 amendment request), this "loss-of-function" condition could theoretically exist for up to 24 hours without any compensatory actions required, if multiple instruments were to become inoperable simultaneously. The revisions to the Action statements that are proposed below will alleviate this concern by ensuring that when instruments for a particular Function become inoperable, operators will perform checks to verify that the Function maintains its capability to complete its safety-related purpose. If it cannot, sufficient channels will be placed in the tripped condition to allow for completion, unless such action would cause the trip function to occur unnecessarily. In such cases, the associated system will be declared inoperable and appropriate required actions taken.

Resolution of the loss-of-function issue requires no further changes to the Action Statements previously proposed for some of the instrumentation addressed by the PNPP TS. As noted previously, no further technical changes are required for TS 3/4.3.1, "Reactor Protection System Instrumentation," because the previously proposed RPS LCO and Actions have already incorporated provisions which do not allow continued operation when any parameter is unable to provide a reactor scram (note that minor editorial word additions are proposed to Actions 3.3.1.b.1 and 3.3.1.b.3 for ease of operator understanding and consistency with the text of other proposed Actions). Also, no further changes are required to TS 3/4.4.2.1, "Safety/Relief Valves," or TS 3/4.4.2.2, "Safety/Relief Valves Low-Low Set Function," to address this repair AOT loss-of-function issue, because no changes were proposed to the repair AOTs for the instruments addressed by these TS.



The Specifications identified as requiring additional changes to selected Action Statements include TS 3/4.3.2 "Isolation Actuation Instrumentation"; TS 3/4.3.3, "Emergency Core Cooling System Actuation Instrumentation"; TS 3/4.3.4.1, "ATWS Recirculation Pump Trip System Instrumentation"; TS 3/4.3.4.2, "End-of-Cycle Recirculation Pump Trip System Instrumentation"; TS 3/4.3.5, "Reactor Core Isolation Cooling System Actuation Instrumentation"; TS 3/4.3.6, "Control Rod Block Instrumentation"; and TS 3/4.3.9 "Plant Systems Actuation Instrumentation." The necessary changes are reflected in Attachment 2 (as denoted by double change bars). The Action Statements for each of these TS are discussed below. Where possible, the Actions being proposed are as consistent with NUREG-1434 as the current Tech Spec format allows.

#### TS 3/4.3.2, Isolation Actuation Instrumentation

For Isolation Actuation, a "Loss-of-Function" is considered to be the inability of any particular "Trip Function" (as identified in Table 3.3.2-1) to isolate its associated piping flow paths upon receipt of a valid signal from that Function (without the need to consider a further single failure event). One trip system typically serves to isolate the inboard valves, and the other trip system isolates the outboard valves. The Action Statements previously proposed for the Isolation Actuation Instrumentation consist of the following general requirements: if channel inoperabilities (for a given Function) only exist in one trip system, then the extended repair time (12 or 24 hours) may be applied, whereas if channel inoperabilities (for a given Function) exist in both trip systems then the inoperable channels in one of the trip systems must be placed in the tripped condition within one hour.

These general requirements work well to preclude any extended loss-of-function situations from occurring for almost all of the Isolation Actuation Functions. However, for all of the Main Steam Line Isolation Functions and for the Functions that make up the single trip system that isolates valve 1E22-F023 in the High Pressure Core Spray System, the previously proposed Actions will not prevent the possibility of an extended loss-of-function. Therefore the Actions within the Isolation Actuation Specification need to be revised to address this possibility by including an operator check for loss-of-function.

Due to the format of the Isolation Actuation Specification, it is difficult to apply the loss-of-function check only to the Functions that require it (MSL isolations and 1E22-F023 isolation) because the Actions which the operator enters first upon occurrence of a channel inoperability (see TS page 3/4 3-9) are "generic" to all Functions, and they contain the directions to the operator for placing of channels in the tripped condition. The Isolation Actuation format is similar to the RPS Specification, but it is different from the other Specifications which will be discussed below (the other Specifications have specific Actions that are directly entered for each Function).

Therefore, it is proposed to revise the previously proposed Actions b and c (from the June 29, 1992 letter) by replacing them with new actions b and c that address the loss-of-function concern, but are similar in format to the RPS Specification with only two Specification-specific

differences. The Isolation Actuation Actions do not include the 6 hour interim Action which is contained within the RPS Actions, since it is not necessary for Isolation Actuation; and Isolation Actuation Action c.1 notes that the loss-of-function check applies only to automatic trip functions, since it does not need to apply to the manual initiation Actions (see discussion of Action c below).

The new Action b is worded such that a loss-of-function cannot occur for any of the automatic isolation actuations since Action b only addresses an inoperability of one channel total. Action c therefore incorporates the loss-of-function check for the automatic isolation signals, ensuring that within one hour the Function has been verified to be maintained either by Operable channels or by placing inoperable channels in the tripped condition. Note that any inoperabilities of channels of manual initiation functions (such as for MSIV isolation or for RCIC isolation) may utilize the full extension time of 24 hours, since NUREG-1434 acknowledges that no credit is taken for manual initiations in the safety analyses, and since inoperabilities of manual initiation channels will not in any way affect the ability of the automatic Functions from completing their signal. See page 7 of Attachment 2 for the newly proposed wording for this Specification. Bases changes are also proposed on page 43 of Attachment 2.

#### TS 3/4.3.3, "Emergency Core Cooling System Actuation Instrumentation"

The Action Statements provided for ECCS Actuation Instrumentation in NUREG-1434 (LCO 3.3.5.1) consist of the following general requirements:

For the Division 1 ECCS [i.e., low pressure core spray (LPCS) and low pressure coolant injection (LPCI) loop A] and Division 2 ECCS [LPCI loops B and C], a check is required to ensure that automatic initiation capability has not been lost for both Divisions of ECCS when an automatic initiation instrument becomes inoperable. This applies to the reactor vessel water level-low level 1, drywell pressure-high, pump start time delay, low pressure ECCS injection valve permissives on reactor vessel pressure-low (Modes 1, 2, and 3 only) and pump discharge flow-low Functions. If a loss-of-function condition does not exist, then up to 24 hours is allowed to restore the channel to operable status or place it in the tripped condition. NUREG-1434 does not require a loss-of-function check to be performed for the injection valve permissive reactor vessel pressure-low Functions while the reactor is in Mode 4 or 5 or for the low pressure ECCS manual initiation Functions.

For the Division 3 ECCS [high pressure core spray (HPCS) system], a check is required to ensure that automatic initiation capability has not been lost when an automatic initiation instrument becomes inoperable. This applies to the reactor vessel water level-low level 2, drywell pressure-high, condensate storage tank level-low, and suppression pool water level-high Functions. If a loss-of-function condition does not exist, then up to 24 hours is allowed to restore the channel to operable status or place it in the tripped condition. NUREG-1434 does not require



a loss-of-function check to be performed for the HPCS manual initiation, HPCS system flow rate-low, HPCS pump discharge pressure-high, or reactor vessel water level-high level 8 Functions.

For the Automatic Depressurization System (ADS), a check is required to ensure that automatic initiation has not been lost for both ADS Trip Systems when an automatic initiation instrument becomes inoperable. This applies to the reactor vessel water level-low level 1, reactor water level-low level 3 permissive, ADS timer, and the low pressure ECCS pump discharge pressure-high permissive Functions. If a loss-of-function condition does not exist, then the NUREG provides at least 96 hours (equivalent to 24 hours, plus 72 hours) to restore the channel to operable status or place the channel in the tripped condition. NUREG-1434 does not require a loss-of-function check to be performed for the ADS manual initiation Function.

In light of the above, the following changes are proposed to the Action Statements of TS Table 3.3.3-1 to be as consistent as possible with NUREG-1434:

Action 30 currently applies to the low pressure ECCS reactor vessel water level-low level 1 and drywell pressure-high Functions (Items A.1.a, A.1.b, B.1.a, and B.1.b) and to the ADS reactor water level-low level 1 Functions (Items A.2.a and B.2.a). This Action Statement has been revised to require, within one hour, a verification that a sufficient number of channels remain operable or are in the tripped condition to maintain automatic actuation capability of either Division 1 or Division 2 ECCS and either ADS Trip System A or Trip System B. This will ensure that an extended, uncompensated loss-of-function condition does not exist. The revised Action 30 will also require the inoperable channel(s) to be placed in the tripped condition within 24 hours. If a loss-of-function condition exists at the end of the first hour, or if it is not desirable to place the inoperable channel(s) in the tripped condition, the associated system(s) must be declared inoperable.

Currently, the ADS reactor vessel water level-low level 3 permissive Functions (Items A.2.d and B.2.d) reference Action 31 rather than Action 30. Action 31, however, does not provide the option of placing the inoperable channel in the tripped condition. This should be an acceptable alternative to declaring the associated ADS trip system inoperable. The level 3 signal is provided only as a confirmatory signal to ensure that a low reactor water level condition actually exists. Placing the inoperable channel in the tripped condition would still require receipt of a level 1 signal to initiate ADS, and placing the channel in the tripped condition is allowed by NUREG-1434. As a result, the referenced Action for the reactor vessel water level-low level 3 Function(s) is being changed from Action 31 to Action 30.

Action 31 currently applies to the low pressure ECCS injection valve permissive on reactor vessel pressure-low (during Modes 1, 2, and 3 only) and to the LPCI 'A' and LPCI 'B' pump start time delay Functions (Items A.1.d, A.1.e, A.1.f, B.1.c, and B.1.d); and to the ADS Manual Inhibit,

ADS timer, ADS reactor vessel water level-low level 3 permissive, and the ADS low pressure ECCS pump discharge pressure permissive Functions (Items A.2.b, A.2.c, A.2.d, A.2.e, A.2.f, B.2.b, B.2.c, B.2.d, and B.2.e). This Action Statement has been revised to require, within one hour, a verification that a sufficient number of channels remain operable to maintain automatic trip capability of either Division 1 or Division 2 ECCS and either ADS Trip System A or Trip System B. This will ensure that an extended, uncompensated loss-of-function condition does not exist. The revised Action 31 will require the inoperable channel(s) to be restored to operable status within 24 hours (rather than requiring them to be placed in the tripped condition as was done in Action 30). Action 31 does not provide for placing inoperable channels in trip, since (as recognized in NUREG-1434) that action would not necessarily result in the safest state for the channel in all events. If a loss-of-function condition exists at the end of the first hour, or the inoperable channel(s) cannot be restored to operable status, the associated system(s) must be declared inoperable.

At the time that the June 29, 1992 amendment request was submitted, Action 31 applied to the HPCS reactor water level-high level 8 Function (Item C.1.c). However, a recent License Amendment (Amendment 50) revised the associated Action to be Action 34. The new Action 34 proposed by this letter (see Attachment 2) contains two aspects which make an additional change to the required Action for the HPCS Level 8 Function desirable (to new Action 33); these two considerations are discussed further under the Action 33 section of this letter (below).

At the time that the June 29, 1992 amendment request was submitted, Action 33 applied to the ADS Manual Inhibit Functions (Items A.2.b and B.2.b). However, a recent License Amendment (Amendment 53) revised the associated Action to be Action 31. That change was unrelated to this current proposed change. The change in assigned Action is still appropriate when examined from a loss-of-function standpoint since, if the inoperability of the Manual Inhibit instruments does not affect the automatic actuation logic, then the wording of the loss-of-function phrase ensures that the 24 hour repair AOT can be utilized. This change of required Action for the Manual Inhibit instruments from Action 33 to Action 31 was not included in the markup in Attachment 2 of the June 29, 1992 letter, but it has been included in the revised Attachment 2 (pages 3/4 3-28 and 3/4 3-29), in order to reflect the change from Action 33 to Action 31 that was made by Amendment 53.

Action 32 currently applies to the low pressure ECCS injection valve permissive reactor vessel pressure-low Functions during Modes 4 and 5 (Item A.1.d, A.1.e, and B.1.c). Since NUREG-1434 does not require a loss-of-function check to be performed when this Function becomes inoperable in Modes 4 and 5, the revision to Action 32 proposed in the June 29, 1992 amendment request requires no changes.

Action 33 currently applies to the low pressure ECCS manual initiation Functions (Items A.1.h and B.1.f); and the ADS manual initiation Functions (Items A.2.b, A.2.g, B.2.b, and B.2.f). Since NUREG-1434 does not require a loss-of-function check to be performed when the manual initiation Trip Functions become inoperable, the revision to Action 33 proposed in the June 29, 1992 amendment request requires no changes.

As noted above in the Action 31 section of this letter, Action 33 is now proposed to be utilized (rather than Action 31 or Action 34) when the HPCS reactor vessel water level-high level 8 Function (Item C.1.c) becomes inoperable. The new Action 33 is preferred over the new Action 34 for two reasons. First, Action 33 (versus Action 34) does not provide the operator with the option of placing inoperable channels in trip, since (as recognized in NUREG-1434) that action would not necessarily result in the safest state for the channel in all events. Secondly, NUREG-1434 does not require a loss-of-function check for this HPCS Level 8 Function, and Action 33 (versus Action 34) does not contain the loss-of-function provisions. As a result, the referenced Action for this Function has been changed from Action 34 (post-Amendment 50) to Action 33. Action 33 will require the inoperable channel(s) to be restored to operable status within 24 hours or the HPCS system be declared inoperable. Therefore, this change is acceptable.

Currently, the HPCS Manual Initiation Function has a separate Action 36 versus Action 33 used for the other Manual Initiation Functions. Action 36 currently allows for the operator to choose between two options when the HPCS Manual Initiation logic becomes inoperable; either place the channel in the tripped condition or declare the HPCS System inoperable. The first option is inappropriate since this is a one-out-of-one logic, and placing the channel in trip would initiate HPCS and start the Division 3 diesel. Therefore, NUREG-1434 does not provide for the option of placing the channel in trip; to be consistent with the NUREG, it is proposed to change the Action for the HPCS Manual Initiation from 36 to 33. Action 33 is more appropriate because it does not provide for placing these channels in trip.

Action 34 currently applies to the HPCS reactor vessel water level-low level 2 and drywell pressure-high Functions (Items C.1.a and C.1.b), in addition to the HPCS reactor vessel water level-high level 8 trip discussed in the Action 31 and Action 33 sections of this letter. This Action Statement has been revised to require, within one hour, a verification that a sufficient number of channels remain operable or are in the tripped condition to maintain automatic HPCS actuation capability. This will ensure that an extended, uncompensated loss-of-function condition does not exist. The revised Action 34 will require the inoperable channel(s) to be placed in the tripped condition within 24 hours. If a loss-of-function condition exists at the end of the first hour or it is not desirable to place the inoperable channel(s) in the tripped condition, the HPCS system must be declared inoperable.

As discussed above, Action 33 rather than Action 34 will now be applied to the HPCS Level 8 Function.

Action 35 currently applies to the condensate storage tank level-low and suppression pool water level-high Functions for HPCS (Items C.1.d and C.1.e). This Action Statement has been revised to require, within one hour, a verification that the HPCS pump suction is either aligned or capable of automatically realigning to the suppression pool. This will ensure that an extended, uncompensated loss-of-function condition does not exist. The revised Action 35 will require at least one inoperable channel to be placed in the tripped condition (which will automatically realign the HPCS pump suction to the suppression pool) within 24 hours. If a loss-of-function condition exists at the end of the first hour or it is not desirable to place an inoperable channel in the tripped condition (or realign the HPCS pump suction to the suppression pool), the HPCS system must be declared inoperable.

Action 39 currently applies to low pressure ECCS pump discharge flow-low Trip Functions (Items A.1.c, A.1.g and B.1.e) and the HPCS pump discharge pressure-high and system flow rate-low Functions (Items C.1.f and C.1.g). This Action Statement has been revised to require, within one hour, a verification that a sufficient number of channels remain operable to maintain automatic actuation capability of either Division 1 or Division 2 ECCS. This will ensure that an extended, uncompensated loss-of-function condition does not exist. The revised Action 39 will require the inoperable channel(s) to be restored to operable status within seven days (the current time limit). If a loss-of-function condition exists at the end of the first hour, or the inoperable channel(s) cannot be restored to operable status within seven days, the associated system must be declared inoperable.

Both the current Action 39 and the markup of Action 39 which was provided in the June 29, 1992 letter include a requirement to place the channel in trip [within one hour (current) or 24 hours (proposed)]. The Action 39 proposed by this current submittal does not provide for placing this channel in trip, which is consistent with NUREG-1434, since placing of the channel in trip would not necessarily result in a safe state for the channel in all events.

NUREG-1434 does not require a loss-of-function check to be performed for the HPCS pump discharge pressure and system flow rate Functions (Items C.1.f and C.1.g). As a result, a new Action is being applied to these Functions. New Action 40, as described below, is consistent with Action 39 with the exception that it does not require a loss-of-function check.

New Action Statement 40 is being proposed to apply to the HPCS pump discharge pressure and system flow rate Functions (Items C.1.f and C.1.g). This new Action Statement requires the inoperable channel(s) to be restored to operable status within seven days (the current time limit). If the inoperable channel(s) cannot be restored to operable status, the HPCS must be declared inoperable. As noted above, NUREG-1434 does not require a loss-of-function check for these Functions.



TS 3/4.3.4.1, "ATWS Recirculation Pump Trip System Instrumentation"

The current Technical Specification Actions b, c, d, and e apply to the two Functions that serve in the logic for the ATWS Recirculation Pump Trip - the reactor vessel water level-low level 2 and the reactor vessel pressure-high Functions. These Action Statements have been replaced with a new Action b which is written to be more consistent with the requirements provided in NUREG-1434, which consist of the following general requirements: with one or more required channels inoperable, restore the channels or place them in trip within 14 days. If the channel(s) inoperability also results in the loss of ATWS-RPT trip capability for one of the two Functions, then the ATWS-RPT trip capability should be restored within 72 hours instead of 14 days, and if both Functions have lost ATWS-RPT trip capability, it should be restored within one hour. This will ensure that an extended, uncompensated loss-of-function condition does not exist. If these times cannot be met or it is not desirable to place channels in their tripped conditions at the end of the applicable period, then within six hours the associated recirculation pump should be removed from service or the plant should be placed in Operational Condition 2 (which results in exiting the Applicability of the Specification).

TS 3/4.3.4.2, "End-of-Cycle Recirculation Pump Trip System Instrumentation"

The current Technical Specification Actions b, c, d and e apply to the two Functions that serve in the logic for the End-of-Cycle Recirculation Pump Trip - the turbine stop valve closure and turbine control valve fast closure Functions. These Action Statements have been replaced with a new Action b which is written to be more consistent with the requirements provided in NUREG-1434, which consist of the following general requirements: with one or more required channels inoperable, restore the channels or place them in trip within 72 hours. If the channel(s) inoperability results in the loss of EOC-RPT trip capability for one or both of the Functions, then the EOC-RPT trip capability should be restored within two hours instead of 72 hours. This will ensure that an extended, uncompensated loss-of-function condition does not exist. If these times cannot be met or it is not desirable to place channels in their tripped conditions at the end of the applicable period, then within four hours the associated recirculation pump fast speed breaker should be removed from service or the plant power level should be reduced to less than 40% rated thermal power (which results in exiting the Applicability of the Specification).

TS 3/4.3.5, "Reactor Core Isolation Cooling System Actuation Instrumentation"

Certain of the Action Statements provided for RCIC Actuation Instrumentation in NUREG-1434 (LCO 3.3.5.2) require a loss-of-function check to be performed when a RCIC automatic initiation instrument becomes inoperable. This applies to the reactor vessel water level-low level 2, condensate storage tank water level-low, and suppression pool water level-high Functions. If a loss-of-function condition does not exist, then 24 hours is allowed to restore the channel to operable status or

place it in the tripped condition. NUREG-1434 does not require a loss-of-function check to be performed for RCIC manual initiation or reactor water level-high level 8 Functions.

The following changes are proposed to the Action Statements of TS Table 3.3.5-1 to be consistent with NUREG-1434:

Action 50 currently applies to the reactor vessel water level-low level 2 Function (Item a). This Action Statement has been revised to require, within one hour, a verification that a sufficient number of low reactor vessel water level channels remain operable or are in the tripped condition to maintain automatic RCIC actuation capability. This will ensure that an extended, uncompensated loss-of-function condition does not exist. The revised Action 50 will require the inoperable channel(s) to be placed in the tripped condition within 24 hours. If a loss-of-function condition exists at the end of the first hour or it is not desirable to place the inoperable channel(s) in the tripped condition, the RCIC system must be declared inoperable.

Action 51 currently applies to the reactor water level-high level 8 Function (item b). Since NUREG-1434 does not require a loss-of-function check to be performed when this Function becomes inoperable, the revision to Action 51 proposed in the June 29, 1992 amendment request requires no changes.

Action 52 currently applies to the condensate storage tank water level-low and the suppression pool water level-high Functions (Items c and d). This Action Statement has been revised to require, within one hour, a verification that the RCIC pump suction is either aligned or capable of automatically realigning to the suppression pool. This will ensure that an extended, uncompensated loss-of-function condition does not exist. The revised Action 52 will require at least one inoperable channel to be placed in the tripped condition (which will automatically realign the RCIC pump suction to the suppression pool) within 24 hours. If a loss-of-function condition exists at the end of the first hour or it is not desirable to place an inoperable channel in the tripped condition (or to realign the RCIC pump suction to the suppression pool), the RCIC system must be declared inoperable.

Action 53 currently applies to the RCIC manual initiation Trip Function (Item e). Since NUREG-1434 does not require a loss-of-function check to be performed when this Trip Function becomes inoperable, the revision to Action 53 proposed in the June 29, 1992 amendment request requires no changes.

#### TS 3/4.3.6, "Control Rod Block Instrumentation"

NUREG-1434 does not provide any specific Action Statements for the individual inputs to the Rod Withdrawal Limiter. The only Action Statement of TS 3/4.3.6 which was impacted by the June 29, 1992 amendment request was Action Statement 62 for the scram discharge volume water level-high and the reactor coolant system recirculation flow-upscale Functions. Action Statement 62 has been revised to require, within one hour, a verification that a sufficient number of channels remain operable



to initiate a rod block by the associated Function. This will ensure that an extended, uncompensated loss-of-function condition does not exist. The revised Action 62 will require at least one inoperable channel to be placed in the tripped condition within 24 hours. If a loss-of-function condition exists at the end of the first hour, or it is not desirable to place an inoperable channel in the tripped condition, a rod block must be initiated.

TS 3/4.3.9, "Plant Systems Actuation Instrumentation"

The June 29, 1992 letter proposed the addition of a new "Action" column to the existing Table 3.3.9-1, and the creation of new Actions 130, 131, and 132. Actions 130 and 131 (which are associated with the Containment Spray System and the Suppression Pool Makeup System) need to be revised to address loss-of-function, whereas Action 132 (which is associated with the Feedwater System/Main Turbine Trip System reactor vessel water level-high level 8 Function) is not affected by the proposed AOT extension and need not have loss-of-function addressed further than is already provided in the Action. As discussed further below, NUREG-1434 does not require a loss-of-function check to be performed for the manual initiation Functions.

Action 130 was proposed in the June 29, 1992 letter to apply to the Containment Spray and Suppression Pool Makeup drywell pressure-high and reactor vessel water level-low level 1 Functions (Table 3.3.9-1 items 1a, 1c, 3a, and 3b). This Action Statement has been revised consistent with NUREG-1434 to require, within one hour, a verification that a sufficient number of channels remain OPERABLE or are in the tripped condition to maintain automatic actuation capability of either subsystem A or B (an editorial change has been made within Table 3.3.9-1 to refer to "Subsystem A" and "B" rather than "System A and B," for clarity to the operator when using new Action 130). This will ensure that an extended, uncompensated loss-of-function does not exist. The revised Action 130 will require the inoperable channel(s) to be placed in the tripped condition within 24 hours. If a loss-of-function condition still exists at the end of the first hour, or it is not desirable to place the inoperable channels in the tripped condition, the associated Containment Spray or Suppression Pool Makeup subsystem must be declared inoperable. Since the drywell pressure and reactor water level instruments that feed these Spray and Makeup logics are the exact same instruments that feed the ECCS and ADS logics, care was taken to ensure that Action 130 is worded to be consistent with Action 30 in Table 3.3.3-1.

Action 131 was proposed in the June 29, 1992 letter to apply to the Containment Spray Functions of containment pressure high, System A and B 10 minute timers, System B 1.5 minute timer and manual initiation, and to the Suppression Pool Makeup Functions of suppression pool water level low, suppression pool makeup timer and manual initiation. This proposed Action Statement has been revised to require, within one hour, a verification that a sufficient number of channels remain OPERABLE to maintain automatic actuation capability of either subsystem A or B. This will ensure that an extended, uncompensated loss-of-function does not exist. The revised Action 131 will require the inoperable channel(s) to

be restored to OPERABLE status within 24 hours, or declare the associated subsystem inoperable. As can be seen, the difference between Action 130 and Action 131 is that 131 does not contain the option to place the inoperable channels in the tripped condition, since as noted in NUREG-1434, for these Functions such an action would not necessarily result in a safe state for the channel in all events.

As briefly mentioned above, NUREG-1434 does not require a loss-of-function check to be performed for the manual initiation function, therefore Action 131 is no longer the appropriate Action for the manual initiation Functions. Therefore a new Action 133 has been created, which will be utilized for the Containment Spray and Suppression Pool Makeup System manual initiation Functions.

Action 133 is applied to the manual initiation Functions, and is similar to Action 131 in that it does not contain the option of placing the inoperable channels in the tripped condition, since as noted in NUREG-1434, such an action could cause the initiation to occur when it is not truly desirable.

## 2. Loss-of-Function During Surveillance Test Performance

One of the changes recommended throughout the topical reports and accepted by the NRC staff in the SERs was an increase in the time permitted to have an instrument inoperable while performing required surveillance testing. Presently most Technical Specification instrumentation tables contain a note which permits an instrument to be inoperable for two hours for surveillance testing "provided at least one other OPERABLE channel in the same trip system is monitoring that parameter." The topical reports recommended changing this time period from two to six hours, and also added similar notes to other instrumentation specifications such as Relief Valve and Low-Low Set Instrumentation.

This supplement proposes to replace the wording of the present notes with a phrase similar to the following:

"When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into the associated ACTIONS may be delayed for up to 6 hours provided the associated Function maintains trip capability."

The reason for this proposed change is to clarify that in all but a few specific cases, not only should there be another instrument "monitoring" the parameter, but there should not be a loss of function when the instrument is made inoperable for surveillance testing. There are specific cases where a single instrument provides a Function and therefore it is recognized that there will be no trip capability for that Function while the instrument is being tested. In these cases, the accompanying note has been revised to specifically permit testing of these instruments without taking the required ACTION for an inoperable instrument (these exceptions will be discussed further below).

As noted above, the primary change being proposed in this portion of the amendment request supplement is to revise the wording of the existing surveillance testing note to clarify when it is permissible to make an instrument inoperable for required surveillance testing. Most of the notes presently state that it is acceptable as long as there is another OPERABLE channel in the same trip system "monitoring" the parameter. However, depending on the logic of the individual instruments involved, simply requiring this "monitoring" capability in the same trip system, without regard for the status of instruments in the other trip system, could lead to a loss of the Function being tested.

The proposed wording would alleviate this concern for logic systems in which the design permits maintaining the Function's capability. In order to utilize the six hour "grace period" for test performance, the operator will be required to assure that the Function maintains its capability during the required surveillance test. For the example provided in Figure 1 (see Section 1 of this attachment (above)), in order for the operator to utilize the six hour test allowance for the Trip System A instruments (outboard), the operator would need to verify that the penetration could still be isolated by Trip System B (inboard) upon receipt of a valid signal from the Reactor Core Isolation Cooling (RCIC) Turbine Exhaust Diaphragm Pressure-High Function. Specific changes being made are discussed below.

The change to Note (a) to Table 3.3.1-1 "Reactor Protection System Instrumentation" permits the operator to make an RPS instrument inoperable for surveillance testing without entry into any required Action for six hours provided that the associated RPS function is maintained. The proposed wording permits surveillance testing of instruments without entry into any Actions if the Function is maintained, but would require the associated Action to be entered if making the instrument inoperable for surveillance testing resulted in a loss of function.

The change to Note (a) to Table 3.3.2-1 "Isolation Actuation Instrumentation" has two parts. For 47 out of 49 of the Functions identified in Table 3.3.2-1, the note requires that if the six hour grace period is to be used, the operator must assure that the isolation capability for the Function will be maintained prior to making an instrument inoperable during the surveillance testing. The other part of the note permits making the Primary Containment Isolation Manual Initiation (Division 3) and the RCIC Isolation Manual Initiation Functions inoperable for six hours for required surveillance tests without requiring the Function to be maintained. This is permitted because Division 3 (the High Pressure Core Spray (HPCS) System) and the RCIC System are single train systems, with only one manual isolation switch serving a single channel in a single trip system. As such, when the instrument is made inoperable for surveillance testing, there are no other instruments available to perform operability checks on to ensure the Function is maintained. No credit is taken for either of these manual initiation functions in the safety analyses, and making such a channel inoperable for surveillance testing does not cause the automatic initiation logic from operating properly on an initiation signal.

NJREG-1434 therefore permits use of the six hour surveillance test allowance for manual initiation Functions, and this provision is also proposed for incorporation into the current PNPP Technical Specifications.

The change to Note (a) of Table 3.3.3-1 "Emergency Core Cooling System Actuation Instrumentation" has two parts. For the majority of the Functions identified in this Table, one part of the note requires that if the six hour grace period is to be used, the operator must assure that the ECCS initiation capability of the Function or the redundant Function is maintained prior to making an instrument inoperable during the surveillance testing. The phrase "redundant Function" was added into this particular note since the format of Table 3.3.3-1 is unique as compared to the other Tables, i.e. this Table divides each of the ECCS Divisions into separate parts of the Table. An example to illustrate this Redundant Function concept is that the "Reactor Vessel Water Level-Low, Level 1" Function for the Division 1 Trip System (Item A.1.a) is redundant to the same function for the Division 2 Trip System (Item B.1.a). If either Division remains capable of actuating on a valid Low Level 1 signal, then the Function has not been lost.

The other part of Note (a) of Table 3.3.3-1 permits making three specific instruments inoperable for six hours for required surveillance tests without requiring the Function to be maintained. These Functions (Items C.1.f, C.1.g, and C.1.h) are all associated with the single train HPCS system. The three functions, HPCS Pump Discharge Pressure-High, HPCS System Flow Rate-Low, and Manual Initiation all utilize single instruments or switches to fulfill the Function. As such, when the instrument is made inoperable for surveillance testing, there is no associated or redundant Function to perform operability checks on. The proposed note therefore has a stipulation that permits making these instruments inoperable for up to six hours for surveillance testing without the need to verify that the Function is maintained.

The change to Note (a) to Table 3.3.4.1-1 "ATWS Recirculation Pump Trip System Instrumentation" permits the operator to make an ATWS Recirculation Pump Trip System instrument inoperable for surveillance testing without entry into any required Action for six hours provided that the associated recirculation pump trip Function is maintained. The proposed wording permits surveillance testing of instruments without entry into any Actions if the Function is maintained, but would require that the associated Action be entered if making the instrument inoperable for surveillance testing resulted in a loss of function.

The change to Note (a) to Table 3.3.4.2-1 "End-of-Cycle Recirculation Pump Trip System Instrumentation" permits the operator to make an End-of-Cycle Recirculation Pump Trip System instrument inoperable for surveillance testing without entry into any required Action for six hours provided that the associated EOC-RPT Function is maintained. The proposed wording permits surveillance testing of instruments without entry into any Actions if the Function is maintained, but requires the associated Action to be entered if making the instrument inoperable during the surveillance testing results in a loss of function.

The change to Note (a) to Table 3.3.5-1 "Reactor Core Isolation Cooling System Actuation Instrumentation" has two parts. For all instruments except the Manual Initiation switch (Item e), the proposed change would permit the operator to make a RCIC Actuation instrument inoperable for surveillance testing without entry into any required Action for six hours provided that the associated Function maintains RCIC Actuation capability. For the Manual Initiation switch the proposed change would permit surveillance testing of this single switch for up to six hours without the need to verify that the Function is maintained. Since RCIC is a single train system, only one manual initiation switch exists, serving a single channel in a single trip system. Making this channel inoperable for the surveillance testing does not prevent the automatic initiation logic from operating properly on an initiation signal. The change to Note (e) to Table 3.3.6-1 "Control Rod Block Instrumentation" permits the operator to make a Control Rod Block System instrument inoperable for surveillance testing without entry into any required Action for six hours provided that the associated Rod Block function is maintained. The proposed wording permits surveillance testing of instruments without entry into any Actions if the Function is maintained, but would require that the associated Action be entered if making the instrument inoperable during the surveillance testing resulted in a loss of function. Note (e) was added as a part of the June 29, 1992 change proposal.

The change to Note (a) to Table 3.3.9-1 "Plant Systems Actuation Instrumentation" has two parts. For all instruments except the "1.5 minute timer" on the B Containment Spray System the note permits the operator to make a Plant Systems Actuation instrument inoperable for surveillance testing without entry into any required Action for six hours provided that the associated Plant System Actuation Function is maintained. The proposed wording permits surveillance testing of instruments without entry into any other Actions if the Function is maintained, but requires the associated Action to be performed if making the instrument inoperable during surveillance testing results in a loss of function. The note also permits surveillance testing of the 1.5 minute timer on the B Containment Spray System for up to six hours, but with no requirement to verify a redundant instrument is available. This timer is unique to the B train of the Containment Spray System, and thus does not have any redundancy in the A train. Testing this timer will not affect the automatic operation of the A train.

A note is being added to Specification 3.4.2.1 "Safety/Relief Valves," Surveillance Requirement 4.4.2.1.2, which permits a channel in the Relief Valve function pressure actuation instrumentation to be inoperable for up to six hours provided the Relief Valve Function is maintained. A note similar to this was proposed to be added to this Specification by Topical Report GENE-770-06-1. PNPP did not propose addition of that note as part of our June 29, 1992 submittal because the wording shown in the Topical Report could have been misinterpreted as requiring the Relief Valve trip system to be tripped at the end of the six hours, which would result in opening of all the SRVs. That extremely undesirable interpretation/result is precluded by the wording of the Notes which are utilized in NUREG-1434, and which are also proposed per this supplemental amendment



request. This note is now being incorporated with the revised wording to assure that the Relief Valve Function is maintained, and that no unnecessary penalty is taken as a result of surveillance testing.

A similar note is being added to Specification 3.4.2.2 "Safety/Relief Valves Low-Low Set Function," Surveillance Requirement 4.4.2.2.1, which permits a channel in the Low-Low-set function pressure actuation instrumentation to be inoperable for up to six hours provided the Low-Low Set Function is maintained. A note similar to this was proposed to be added to the specifications by GENE-770-06-01, "Bases for Changes to Surveillance Test Intervals and Allowed Out-of-Service Times for Selected Instrumentation Technical Specifications." PNPP did not add that note as part of the original submittal because of the wording of the note (see discussion in paragraph above). This note is now being incorporated with the revised wording to assure that the Low-Low set function is maintained, and that no unnecessary penalty is taken as a result of surveillance testing.

In addition to the changes to the Specifications described above, the associated Bases sections are being revised to include references to these surveillance test allowances.

#### SUMMARY

In summary, a review has been completed of the changes proposed in the June 29, 1992 amendment request. Each Action statement and Surveillance Requirement which could have been subject to an extended loss-of-function configuration due to the proposed extensions of Allowable Outage Times have been revised to include a loss-of-function check consistent with NUREG-1434. As a result, this submittal has been determined to adequately address the loss-of-function concerns for instruments at PNPP that are within the scope of the BWROG reliability-based instrumentation analyses.