# BVPS CONVERSION TO IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS)

## *SECTION 3.3A Reactor Trip System Instrumentation*

ENCLOSURES

1. MARKUP OF THE ISTS TO SHOW THE BVPS DIFFERENCE AND JUSTIFICATION FOR THE DEVIATION (JFD) FROM THE STANDARD
2. MARKUP OF THE ISTS BASES TO SHOW THE BVPS DIFFERENCE AND JFD FROM THE STANDARD
3. MARKUP OF THE CURRENT BVPS TECHNICAL SPECIFICATIONS (CTS) TO SHOW CHANGES AND DISCUSSION OF CHANGES (DOCs)
4. NO SIGNIFICANT HAZARDS CONSIDERATION (NSHC) FOR CHANGES MADE TO THE CTS

ENCLOSURE 1

***CHANGES TO THE ISTS***

MARKUPS TO SHOW BVPS PLANT SPECIFIC DIFFERENCES
&
JUSTIFICATION FOR DEVIATION (JFD)
FROM THE STANDARD TS

Introduction

This enclosure contains the markup of the Improved Standard Technical Specifications (ISTS) to show the changes necessary to make the ISTS document specific to BVPS Units 1 and 2. Changes to the ISTS are identified with a number. The number is associated with a JFD that describes the reason for the change. The markup of the ISTS is followed by a document containing the numbered JFDs for the changes made to each of the ISTS. Not every change to the ISTS is identified and explained by a JFD. Changes that simply insert current Technical Specification (CTS) information into bracketed (optional) ISTS text are not identified with a separate JFD. Bracketed ISTS text identifies specific text that is to be replaced with the corresponding CTS information. Therefore, such changes to the ISTS are self-explanatory and represent the simple transference of CTS requirements to the ISTS. Other changes to the ISTS (i.e., less obvious changes) are described by a JFD.

As the BVPS Unit 1 & 2 Technical Specifications (TS) are being combined into a single set of TS, one markup of each ISTS is usually provided for both Units 1 and 2. In cases where significant Unit differences make separate Unit 1 and 2 TS desirable to preserve the presentation and clarity of the TS requirements, separate Unit specific TS are included. Unit differences are identified in each ISTS.

In addition, the ISTS in this enclosure are marked (where applicable) to show the changes to the standard text resulting from the Industry/NRC TS Task Force (TSTF) process. The TSTF revisions to the standard are marked-up and identified with the applicable TSTF number (i.e., TSTF-03, TSTF-19, etc.). Each TSTF change has its own justification associated with it as part of the Industry/NRC process. The TSTF justifications are not repeated in the BVPS ISTS conversion documentation.

The following Table contains the list of the ISTS and the corresponding BVPS CTS for this section along with the resulting BVPS specific ITS for the section. The Table provides a summary disposition of the ISTS and the CTS for this Section.

SECTION 3.3A1 RTS INSTRUMENTATION

| ISTS | BVPS ITS | CTS |
|---|---|---|
| 3.3.1 RTS Instrumentation | 3.3.1 RTS Instrumentation | 3.3.1.1 RTS Instrumentation |

## 3.3 INSTRUMENTATION

### 3.3.1 Reactor Trip System (RTS) Instrumentation

LCO 3.3.1 The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1-1.

ACTIONS

- NOTE -
Separate Condition entry is allowed for each Function.

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more Functions with one or more required channels or trains inoperable. | A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s) or train(s). | Immediately |
| B. One Manual Reactor Trip channel inoperable. | B.1 Restore channel to OPERABLE status. | 48 hours |
| | <u>OR</u> | |
| | B.2 Be in MODE 3. | 54 hours |
| C. One channel or train inoperable. | C.1 Restore channel or train to OPERABLE status. | 48 hours |
| | <u>OR</u> | |
| | C.2.1 Initiate action to fully insert all rods. | 48 hours |
| | <u>AND</u> | |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| | C.2.2 | Place the Rod Control System in a condition incapable of rod withdrawal. | 49 hours |
| D. One Power Range Neutron Flux - High channel inoperable. | | - NOTE - The inoperable channel may be bypassed for up to [ 4 ] hours for surveillance testing and setpoint adjustment of other channels. | NUREG-1431 Rev 3 |
| | D.1.1 | Place channel in trip. | 6 hours |
| | AND | | |
| | D.1.2 | Reduce THERMAL POWER to ≤ 75% RTP. | 12 hours |
| | OR | | |
| | D.2.1 | Place channel in trip. | 6 hours |
| | AND | | |
| | D.2.2 | - NOTE - Only required to be performed when the Power Range Neutron Flux input to QPTR is inoperable. | |
| | | Perform SR 3.2.4.2. | Once per 12 hours |
| | OR | | |
| | D.3 | Be in MODE 3. | 12 hours |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| E. One channel inoperable. | | - NOTE -<br>The inoperable channel may be bypassed for up to [ 4 ] hours for surveillance testing of other channels. | NUREG-1431 Rev 3 |
| | E.1 | Place channel in trip. | 6 hours |
| | OR | | |
| | E.2 | Be in MODE 3. | 12 hours |
| F. One Intermediate Range Neutron Flux channel inoperable. | F.1 | Reduce THERMAL POWER to < P-6. | 24 hours |
| | OR | | |
| | F.2 | Increase THERMAL POWER to > P -10. | 24 hours |
| G. Two Intermediate Range Neutron Flux channels inoperable. | | - NOTE -<br>Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. | |
| NUREG-1431 Rev 3 | G.1 | Suspend operations involving positive reactivity additions. | Immediately |
| | AND | | |
| | G.2 | Reduce THERMAL POWER to < P-6. | 2 hours |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| H. One Source Range Neutron Flux channel inoperable. | - NOTE - Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. | NUREG-1431 Rev 3 |
| | H.1 Suspend operations involving positive reactivity additions. | Immediately |
| I. Two Source Range Neutron Flux channels inoperable. | I.1 Open reactor trip breakers (RTBs). | Immediately |
| J. One Source Range Neutron Flux channel inoperable. | J.1 Restore channel to OPERABLE status. | 48 hours |
| | <u>OR</u> | |
| | J.2.1 Initiate action to fully insert all rods. | 48 hours |
| | <u>AND</u> | |
| | J.2.2 Place the Rod Control System in a condition incapable of rod withdrawal. | 49 hours |
| K. One channel inoperable. | - NOTE - The inoperable channel may be bypassed for up to [ 4 ] hours for surveillance testing of other channels. | NUREG-1431 Rev 3 |
| | K.1 Place channel in trip. | 6 hours |
| | <u>OR</u> | |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| | K.2 | Reduce THERMAL POWER to < P-7. | 12 hours |
| L. One Reactor Coolant Pump Breaker Position channel inoperable. single loop NUREG-1431, Rev. 3 1 | | - NOTE - The inoperable channel may be bypassed for up to [4] hours for surveillance testing of other channels. | |
| | L.1 | Restore channel to OPERABLE status. | 6 hours |
| | OR | | |
| | L.2 | Reduce THERMAL POWER to < P-8. | 10 hours |
| M. One Turbine Trip channel inoperable. L | | - NOTE - The inoperable channel may be bypassed for up to [ 4 ] hours for surveillance testing of other channels. | NUREG-1431 Rev 3 |
| | M.1 | Place channel in trip. | 6 hours |
| | OR | | |
| | M.2 | Reduce THERMAL POWER to < [P-9]. | 10 hours |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| ~~N~~. One train inoperable.<br><br>M | - NOTE -<br>One train may be bypassed for up to [ 4 ] hours for surveillance testing provided the other train is OPERABLE. | NUREG-1431 Rev 3 |
| | ~~N~~.1 Restore train to OPERABLE status. | 6 hours |
| | OR | |
| | ~~N~~.2 Be in MODE 3. | 12 hours |
| ~~O~~. One RTB train inoperable.<br><br>N | - NOTES -<br>1. One train may be bypassed for up to 2 hours for surveillance testing, provided the other train is OPERABLE.<br>2. One RTB may be bypassed for up to 2 hours for maintenance on undervoltage or shunt trip mechanisms, provided the other train is OPERABLE. | NUREG-1431 Rev 3 |
| | ~~O~~.1 Restore train to OPERABLE status. | 1 hour |
| | OR | |
| | ~~O~~.2 Be in MODE 3. | 7 hours |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| P. One or more channels inoperable. $\boxed{O}$ | P.1 | Verify interlock is in required state for existing unit conditions. | 1 hour |
| | OR | | |
| | P.2 | Be in MODE 3. | 7 hours |
| Q. One or more channels inoperable. $\boxed{P}$ | Q.1 | Verify interlock is in required state for existing unit conditions. | 1 hour |
| | OR | | |
| | Q.2 | Be in MODE 2. | 7 hours |
| R. One trip mechanism inoperable for one RTB. $\boxed{Q}$ | R.1 | Restore inoperable trip mechanism to OPERABLE status. | 48 hours |
| | OR | | |
| | R.2 | Be in MODE 3. | 54 hours |

INSERT 1 Action Conditions R and S

TSTF-453

SURVEILLANCE REQUIREMENTS

**- NOTE -**
Refer to Table 3.3.1-1 to determine which SRs apply for each RTS Function.

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.1.1 | Perform CHANNEL CHECK. | 12 hours |

SURVEILLANCE REQUIREMENTS (continued)

TSTF-371

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.3.1.2 | - NOTES -<br>~~1. Adjust NIS channel if absolute difference is > 2%.~~<br>~~2.~~ Not required to be performed until ~~[12]~~ 24 hours after THERMAL POWER is ≥ 15% RTP.<br><br>Compare results of calorimetric heat balance calculation to ~~Nuclear Instrumentation System (NIS) channel output.~~ power range channel output. Adjust power range channel output if calorimetric heat balance calculations results exceed power range channel output by more than +2% RTP. | 24 hours |
| SR 3.3.1.3 | - NOTES -<br>~~1.~~ Adjust NIS channel if absolute difference is ≥ 3%.<br>~~2.~~ Not required to be performed until ~~[24] hours~~ 7 days after THERMAL POWER is ≥ ~~[15]~~ 50% RTP.<br><br>Compare results of the incore detector measurements to Nuclear Instrumentation System (NIS) ~~NIS~~ AFD. | 31 effective full power days (EFPD) |
| SR 3.3.1.4 | - NOTE -<br>This Surveillance must be performed on the reactor trip bypass breaker prior to placing the bypass breaker in service.<br><br>Perform TADOT. | 31 days on a STAGGERED TEST BASIS |
| SR 3.3.1.5 | Perform ACTUATION LOGIC TEST. | 31 days on a STAGGERED TEST BASIS |

TSTF-371

3

4

6

SURVEILLANCE REQUIREMENTS (continued)

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.3.1.6 | - NOTE - Not required to be performed until ~~[24] hours~~ after THERMAL POWER is ≥ 50% RTP. <br><br> Calibrate excore channels to agree with incore detector measurements. | ~~[92] EFPD~~ |
| SR 3.3.1.7 | - NOTE - Not required to be performed for source range instrumentation ~~prior to entering MODE 3 from MODE 2~~ until 4 hours after ~~entry into MODE 3~~. <br><br> Perform COT. | [92] days |

9

7 days

7

Once per fuel cycle

6

12

CTS

8

power has been reduced below P-6.

9

Moved from next SR

NUREG-1431, Rev. 3

SURVEILLANCE REQUIREMENTS (continued)

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.3.1.8 7 | - NOTE -<br>This Surveillance shall include verification that interlocks P-6 and P-10 are in their required state for existing unit conditions.<br><br>Perform COT. | - NOTE -<br>Only required when not performed within previous [92]-days<br><br>Prior to reactor startup<br><br>AND<br><br>8 ~~Four hours after reducing power below P-6 for source range instrumentation~~<br><br>~~AND~~<br><br>Moved to previous SR<br><br>[Twelve] hours after reducing power below P-10 for power and intermediate range instrumentation<br><br>AND<br><br>Every 92 days thereafter |
| SR 3.3.1.9 8 | - NOTE -<br>Verification of setpoint is not required.<br><br>Perform TADOT. | [92] days |

SURVEILLANCE REQUIREMENTS (continued)

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.3.1.10<br>1. | - NOTE -<br>This Surveillance shall include verification that the time constants are adjusted to the prescribed values.<br><br>Perform CHANNEL CALIBRATION. | [18] months |
| ~~SR 3.3.1.11~~<br>2. | ~~- NOTE -~~<br>Neutron detectors are excluded from CHANNEL CALIBRATION.<br><br>~~Perform CHANNEL CALIBRATION.~~ | ~~[18] months~~ |
| SR ~~3.3.1.12~~ | - NOTE -<br>This ~~Surveillance~~ shall include verification ~~of Reactor~~ Coolant System ~~resistance temperature~~ detector bypass loop flow ~~rate.~~<br><br>Perform CHANNEL CALIBRATION. | [18] ~~months~~ |
| SR 3.3.1.~~13~~<br>11 | Perform COT. | 18 months |
| SR 3.3.1.~~14~~<br>12 | - NOTE -<br>Verification of setpoint is not required.<br><br>Perform TADOT. | [18] months |
| 13<br>SR 3.3.1.~~15~~ | - NOTE -<br>Verification of setpoint is not required.<br><br>Perform TADOT. | Prior to exceeding the [P-9] interlock whenever the unit has been in MODE 3, if not performed within the previous 31 days |

5

SURVEILLANCE REQUIREMENTS (continued)

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.3.1.~~10~~ 14 | - NOTE -<br>Neutron detectors are excluded from response time testing.<br><br>Verify RTS RESPONSE TIME is within limits. | [18] months on a STAGGERED TEST BASIS |

Table 3.3.1-1 (page 1 of 6)
Reactor Trip System Instrumentation

10 13 12

TSTF-453 INSERT 2 CTS

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE (UNIT 1) | ~~NOMINAL TRIP SETPOINT~~ (UNIT 2 ALLOWABLE VALUE) |
|---|---|---|---|---|---|---|
| 1. Manual Reactor Trip | 1,2 | 2 | B | SR 3.3.1.~~14~~ 12 | NA | ~~NA~~ |
| | 3$^{(a)}$, 4$^{(a)}$, 5$^{(a)}$ | 2 | C | SR 3.3.1.~~14~~ | NA | ~~NA~~ |
| 2. Power Range Neutron Flux | | | | 11 | | |
| a. High | 1,2 | 4 | D | SR 3.3.1.3<br>SR 3.3.1.1<br>SR 3.3.1.~~2~~ 6<br>SR 3.3.1.9<br>SR 3.3.1.~~7~~ 10<br>SR 3.3.1.~~11~~<br>SR 3.3.1.~~16~~ 14 | ≤ ~~[111.2]~~% RTP<br>≤ 109.5 | ~~[109]% RTP~~ |
| b. Low | 1$^{(b)}$,2 (c) | 4 | E | SR 3.3.1.1 7<br>SR 3.3.1.~~8~~ 10<br>SR 3.3.1.~~11~~<br>SR 3.3.1.~~16~~ 14 | ≤ ~~[27.2]~~% RTP<br>≤ 25.5 | ~~[25]% RTP~~ |
| 3. Power Range Neutron Flux ~~Rate~~<br>~~a.~~ High Positive Rate | 1,2 | 4 | E | 6<br>SR 3.3.1.~~7~~<br>SR 3.3.1.~~11~~ 10 | ≤ ~~[6.8]~~% RTP with time constant ≥ [2] sec<br>≤ 5.5 | ~~[5]% RTP with time constant ≥ [2] sec~~ |
| ~~b. High Negative Rate~~ | ~~1,2~~ | ~~4~~ | ~~E~~ | ~~SR 3.3.1.7~~<br>~~SR 3.3.1.11~~<br>~~SR 3.3.1.16~~ | ~~≤ [6.8]% RTP with time constant ≥ [2] sec~~ | ~~[5]% RTP with time constant ≥ [2] sec~~ |
| 4. Intermediate Range Neutron Flux | 1$^{(b)}$, 2~~$^{(c)}$~~ (f) | 2 | F,G | SR 3.3.1.1 7<br>SR 3.3.1.~~8~~ 10<br>SR 3.3.1.~~11~~ | ≤ ~~[31]~~% RTP<br>≤ 27.9 | ~~[25]% RTP~~ |
| 5. Source Range Neutron Flux | 2~~$^{(d)}$~~ (g) | 2 | H,I | SR 3.3.1.1<br>~~SR 3.3.1.8~~ 8 SR 3.3.1.6<br>SR 3.3.1.~~11~~ 10<br>~~SR 3.3.1.16~~ | ≤ ~~[1.4 E5]~~ cps<br>≤ 1.3 | ~~[1.0 E5] cps~~ |
| | 3$^{(a)}$, 4$^{(a)}$, 5$^{(a)}$ | 2 | I,J | SR 3.3.1.1 6<br>SR 3.3.1.~~7~~<br>SR 3.3.1.~~11~~ 10<br>~~SR 3.3.1.16~~ | ≤ ~~[1.4 E5]~~ cps | ~~[1.0 E5] cps~~ |

INSERT 3

(a) With Rod Control System capable of rod withdrawal or one or more rods not fully inserted.

(b) Below the P-10 (Power Range Neutron Flux) interlocks.

~~(c)~~ (f) Above the P-6 (Intermediate Range Neutron Flux) interlocks.

~~(d)~~ (g) Below the P-6 (Intermediate Range Neutron Flux) interlocks.

14

TSTF-453

Table 3.3.1-1 (page 2 of 6)
Reactor Trip System Instrumentation

13 12 10 UNIT 1 UNIT 2 ALLOWABLE VALUE

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE | ~~NOMINAL TRIP SETPOINT~~ 3 |
|---|---|---|---|---|---|---|
| 6. Overtemperature ΔT | 1,2 | ~~[4]~~ 3 | E | SR 3.3.1.1 9<br>SR 3.3.1.3<br>SR 3.3.1.~~6~~ 6<br>SR 3.3.1.~~7~~ 10<br>SR 3.3.1.~~12~~ 14<br>SR 3.3.1.~~16~~ | Refer to Note 1 ~~(Page 3.3.1-16)~~ 22 | Refer to Note ~~1~~ ~~(Page 3.3.1-16)~~ |
| 7. Overpower ΔT | 1,2 | ~~[4]~~ | E | SR 3.3.1.~~1~~ 6<br>SR 3.3.1.~~7~~ 10<br>SR 3.3.1.~~12~~<br>SR 3.3.1.~~16~~ 14 | Refer to Note 2 ~~(Page 3.3.1-17)~~ | Refer to Note 2 ~~(Page 3.3.1-17)~~ 4 |
| 8. Pressurizer Pressure | | | | | | |
| a. Low | 1[(f)] (h) | ~~[4]~~ 3 | K | SR 3.3.1.1 6<br>SR 3.3.1.~~7~~ 14<br>SR 3.3.1.10<br>SR 3.3.1.~~16~~ | ≥ ~~[1886]~~ psig 1941 | ~~[1900] psig~~ ≥ 1941 psig with time constants ≥ 2 sec for lead and ≤ 1 sec for lag. |
| b. High | 1,2 15 | ~~[4]~~ | E | SR 3.3.1.1 6<br>SR 3.3.1.~~7~~<br>SR 3.3.1.10<br>SR 3.3.1.~~16~~ 14 | ≤ ~~[2396]~~ psig 2389 | ~~[2385]~~ psig ≤ 2379 |
| 9. Pressurizer Water Level - High | (h) 1[(e)] | 3 | K | SR 3.3.1.1 6<br>SR 3.3.1.~~7~~<br>SR 3.3.1.10 | ≤ ~~[93.8]~~% ≤ 92.5 | ~~[92]~~% |
| 10. Reactor Coolant Flow - Low | 1[(f)] (h) | 3 per loop | K | SR 3.3.1.1 6<br>SR 3.3.1.~~7~~ 14<br>SR 3.3.1.10<br>SR 3.3.1.~~16~~ | ≥ ~~[89.2]~~% 89.8 | ~~[90]~~% ≥ 89.6 |
| 11. Reactor Coolant Pump (RCP) Breaker Position 16 | | | | | | |
| ~~a. Single Loop~~ | ~~1[(f)]~~ (h) | ~~1 per RCP~~ | ~~L~~ | ~~SR 3.3.1.14~~ 12 | ~~NA~~ | ~~NA~~ |
| ~~b. Two Loops~~ | 1[(g)] | 1 per RCP | K | SR 3.3.1.14 | NA | NA |

TSTF-453

(h) ~~(e)~~ Above the P-7 (Low Power Reactor Trips Block) interlock.

~~(f) Above the P-8 (Power Range Neutron Flux) interlock.~~

~~(g) Above the P-7 (Low Power Reactor Trips Block) interlock and below the P-8 (Power Range Neutron Flux) Interlock~~

16

10 UNIT 1 | UNIT 2 ALLOWABLE VALUE

Table 3.3.1-1 (page 3 of 6)
Reactor Trip System Instrumentation

13 12

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE | ~~NOMINAL TRIP SETPOINT~~ |
|---|---|---|---|---|---|---|
| 12. Undervoltage RCPs | 1~~(e)~~ (h) | ~~[3]~~ 1 per bus | K | SR 3.3.1.~~9~~ 8<br>SR 3.3.1.10 14<br>SR 3.3.1.~~16~~ 8 | ≥ ~~[4760]~~ V ≥ 2962 | ~~[4830] V~~ |
| 13. Underfrequency RCPs | 1~~(e)~~ | ~~[3]~~ per bus | K | SR 3.3.1.~~9~~<br>SR 3.3.1.10 14<br>SR 3.3.1.~~16~~ | ≥ ~~[57.1]~~ Hz 57.4 | ~~[57.5]~~ Hz ≥ 57.45 |
| 14. Steam Generator (SG) Water Level - Low Low | 1,2 | ~~[4 per SG]~~ 3 | E | SR 3.3.1.1 6<br>SR 3.3.1.~~7~~<br>SR 3.3.1.10 14<br>SR 3.3.1.~~16~~ | ≥ ~~[30.4]~~% ≥ 19.1 | ~~[32.3]%~~ ≥ 20 |
| ~~15. SG Water Level - Low~~ 17 | ~~1,2~~ | ~~2 per SG~~ | ~~E~~ | ~~SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10<br>SR 3.3.1.16~~ | ~~≥ [30.4]%~~ | ~~[32.3]%~~ |
| ~~Coincident with Steam Flow/Feedwater Flow Mismatch~~ | ~~1,2~~ | ~~2 per SG~~ | ~~E~~ | ~~SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10<br>SR 3.3.1.16~~ | ~~≤ [42.5]% full steam flow at RTP~~ | ~~[40]% full steam flow at RTP~~ |
| 15 ~~16~~. Turbine Trip | | | | | 42.9 | ≥ 958 |
| a. Low Fluid Oil Pressure | 1~~(h)~~ (i) | 3 | ~~M~~ L | SR 3.3.1.10<br>SR 3.3.1.~~15~~ 13 | ≥ ~~[750]~~ psig | ~~[800] psig~~ |
| b. Turbine Stop Valve Closure | 1~~(h)~~ | 4 | M | SR 3.3.1.10<br>SR 3.3.1.~~15~~ | ≥ [1]% open | ~~[1]% open~~ ≥ |
| 16 ~~17~~. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS) | 1,2 | 2 trains | ~~N~~ M | SR 3.3.1.~~14~~ 12 | NA | NA |

(h) ~~(e)~~ Above the P-7 (Low Power Reactor Trips Block) interlock. ← TSTF-453

(i) ~~(h)~~ Above the P-9 (Power Range Neutron Flux) interlock.

Unit 1-Auto Stop
Unit 2-Emergency Trip Header ← 18

Table 3.3.1-1 (page 4 of 6)
Reactor Trip System Instrumentation

10 UNIT 1 | UNIT 2 ALLOWABLE VALUE

13 12

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE | ~~NOMINAL(j) TRIP SETPOINT~~ |
|---|---|---|---|---|---|---|
| 17 ~~18~~. Reactor Trip System Interlocks | | | | SR 3.3.1.5 ← TSTF-347 | | |
| a. Intermediate Range Neutron Flux, P-6 | 2(d) (g) | 2 | O ~~P~~ | SR 3.3.1.~~11~~ 10<br>SR 3.3.1.~~13~~ 11 | ≥ ~~[6E-11]~~ amp<br>≥ 9E-11 | ~~[1E-10] amp~~ |
| b. Low Power Reactor Trips Block, P-7 | 1 | 1 per train | ~~Q~~ P | ~~SR 3.3.1.11~~<br>~~SR 3.3.1.13~~ | NA | NA |
| c. Power Range Neutron Flux, P-8 | 1 | 4 | ~~Q~~ P | SR 3.3.1.~~11~~ 10<br>SR 3.3.1.~~13~~ 11 | ≤ ~~[50.2]~~% RTP<br>≤ 30.5 | ~~[48]% RTP~~ |
| d. Power Range Neutron Flux, P-9 | 1 | 4 | ~~Q~~ P | SR 3.3.1.~~11~~ 10<br>SR 3.3.1.~~13~~ 11 | ≤ ~~[52.2]~~% RTP<br>≤ 49.5 | ~~[50]% RTP~~ |
| e. Power Range Neutron Flux, P-10 | 1,2 | 4 | O ~~P~~ | SR 3.3.1.~~11~~ 10<br>SR 3.3.1.~~13~~ 11 | ≥ ~~[7.8]~~ 9.5% RTP and ≤ ~~[12.2]~~ 10.5% RTP | ~~[10]% RTP~~<br>≥ 9.5% RTP and ≤ 10.5% RTP |
| f. Turbine ~~Impulse~~ First Stage (CTS) Pressure, P-13 | 1 | 2 | ~~Q~~ P | ~~[SR 3.3.1.1]~~<br>SR 3.3.1.10<br>SR 3.3.1.~~13~~ 11 (19) | ≤ ~~[12.2]~~% turbine power<br>≤ 10.5 | ~~[10]~~% turbine power |
| 18 ~~19~~. Reactor Trip Breakers~~(i)~~ (j) (RTBs) | 1,2 (a) | 2 trains | ~~O~~ N | SR 3.3.1.4 | NA | NA |
| | 3~~(b)~~, 4~~(b)~~, 5~~(b)~~ (a) | 2 trains | C | SR 3.3.1.4 | NA | NA |
| 19 ~~20~~. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms | 1,2 (a) | 1 each per RTB | ~~R~~ Q | SR 3.3.1.4 | NA | NA |
| | 3~~(b)~~, 4~~(b)~~, 5~~(b)~~ (a) | 1 each per RTB | C | SR 3.3.1.4 | NA | NA |
| 20 ~~21~~. Automatic Trip Logic | 1,2 (a) | 2 trains | ~~N~~ M | SR 3.3.1.5 | NA | NA |
| | 3~~(b)~~, 4~~(b)~~, 5~~(b)~~ (a) | 2 trains | C | SR 3.3.1.5 | NA | NA |

20

(a) ~~(b)~~ With Rod Control System capable of rod withdrawal or one or more rods not fully inserted.

(g) ~~(d)~~ Below the P-6 (Intermediate Range Neutron Flux) interlocks.

(j) ~~(i)~~ Including any reactor trip bypass breakers that are racked in and closed for bypassing an RTB.

~~REVIEWER'S NOTE~~

~~(j) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~

TSTF-453

21

Replace the generic ISTS Note 1 and 2 with the BVPS Unit 1 and 2 specific CTS Overtemperature ΔT and Overpower ΔT Notes 1 - 4 (2 notes per Unit). The CTS Notes are included in Enclosure 3 (See Enclosure 3 for CTS Note details).

22

Table 3.3.1-1 (page 5 of 6)
Reactor Trip System Instrumentation

~~Note 1: Overtemperature ΔT~~

~~The Overtemperature ΔT Function Allowable Value shall not exceed the following nominal Trip Setpoint by more than [3.8]% of ΔT span.~~

$$\Delta T\frac{(1+\tau_1 s)}{(1+\tau_2 s)}\left(\frac{1}{1+\tau_3 s}\right)\leq \Delta T_Q\left\{K_1-K_2\frac{(1+\tau_4 s)}{(1+\tau_5 s)}\left[T\frac{1}{(1+\tau_6 s)}-T'\right]+K_3(P-P')-f_1(\Delta I)\right\}$$

Where: $\Delta T$ is measured RCS $\Delta T$, °F.
$\Delta T_Q$ is the indicated $\Delta T$ at RTP, °F.
s is the Laplace transform operator, $sec^{-1}$.
T is the measured RCS average temperature, °F.
T' is the nominal $T_{avg}$ at RTP, ≤ [*]°F.

P is the measured pressurizer pressure, psig
P' is the nominal RCS operating pressure, ≥ [*] psig

| | | |
|---|---|---|
| $K_1 \leq$ [*] | $K_2 \geq$ [*]/°F | $K_3 \geq$ [*]/psig |
| $\tau_1 \geq$ [*] sec | $\tau_2 \leq$ [*] sec | $\tau_3 \leq$ [*] sec |
| $\tau_4 \geq$ [*] sec | $\tau_5 \leq$ [*] sec | $\tau_6 \leq$ [*] sec |

| | | |
|---|---|---|
| $f_1(\Delta I)$ = | [*] {[*] + ($q_t$ - $q_b$)} | when $q_t$ - $q_b$ ≤ - [*]% RTP |
| | 0% of RTP | when -[*]% RTP < $q_t$ - $q_b$ ≤ [*]% RTP |
| | -[*]{($q_t$ - $q_b$) - [*]} | when $q_t$ - $q_b$ > [*]% RTP |

*Where $q_t$ and $q_b$ are percent RTP in the upper and lower halves of the core, respectively, and $q_t + q_b$ is the total THERMAL POWER in percent RTP.*

*These values denoted with [*] are specified in the COLR.

Replace the generic ISTS Note 1 and 2 with the BVPS Unit 1 and 2 specific CTS Overtemperature ΔT and Overpower ΔT Notes 1 - 4 (2 notes per Unit).
The CTS Notes are included in Enclosure 3 (See Enclosure 3 for CTS Note details).

22

Table 3.3.1-1 (page 6 of 6)
Reactor Trip System Instrumentation

Note 2: Overpower ΔT

The Overpower ΔT Function Allowable Value shall not exceed the following nominal Trip Setpoint by more than [3]% of ΔT span.

$$\Delta T \frac{(1+\tau_1 s)}{(1+\tau_2 s)}\left(\frac{1}{1+\tau_3 s}\right) \le \Delta T_Q\left\{K_4 - K_5 \frac{\tau_7 s}{1+\tau_7 s}\left(\frac{1}{1+\tau_6 s}\right)T - K_6\left[T\frac{1}{1+\tau_6 s} - T''\right] - f_2(\Delta I)\right\}$$

Where: ΔT is measured RCS ΔT, °F.
$\Delta T_Q$ is the indicated ΔT at RTP, °F.
s is the Laplace transform operator, $sec^{-1}$.
T is the measured RCS average temperature, °F.
T" is the nominal $T_{avg}$ at RTP, ≤ [*]°F.

$K_4 \le$ [*]
$K_5 \ge$ [*]/°F for increasing $T_{avg}$
[*]/°F for decreasing $T_{avg}$
$K_6 \ge$ [*]/°F when T > T"
[*]/°F when T ≤ T"
$\tau_1 \ge$ [*] sec
$\tau_2 \le$ [*] sec
$\tau_3 \le$ [*] sec
$\tau_6 \le$ [*] sec
$\tau_7 \ge$ [*] sec

$f_2(\Delta I)$ = [*]

*These values denoted with [*] are specified in the COLR.

# INSERTS FOR
# ITS 3.3.1, RTS INSTRUMENTATION

1. New Action Conditions R and S from TSTF-453

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| R. One channel inoperable. | ---NOTE---<br>The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels.<br>---<br>R.1 Place channel in trip. | <br><br><br><br>6 hours |
| S. Required Action and associated Completion Time of Condition R not met.<br><br>OR<br><br>Two or more channels inoperable. | S.1.1 Initiate action to fully insert all rods.<br><br>AND<br><br>S.1.2 Initiate action to place the Rod Control System in a condition incapable of rod withdrawal.<br><br>OR<br><br>S.2 Initiate action to borate the RCS to > the all rods out (ARO) critical boron concentration. | Immediately<br><br><br><br>Immediately<br><br><br><br><br><br>Immediately |

2. Additional Applicable Modes for Power Range Neutron Flux Low Trip Function from TSTF-453

| | | | | | |
|---|---|---|---|---|---|
| 2(d), 3(e) | 4 | R,S | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10<br>SR 3.3.1.14 | ≤ 25.5% RTP | ≤ 25.5% RTP |

## INSERTS FOR
## ITS 3.3.1, RTS INSTRUMENTATION

3. New Applicability footnotes from **TSTF-453**

(c) With $k_{eff} \geq 1.0$.

(d) With $k_{eff} < 1.0$, and all RCS cold leg temperatures ≥ 500 $^0$F, and RCS boron concentration ≤ the ARO critical boron concentration when the Rod Control System is capable of rod withdrawal, or one or more rods not fully inserted.

(e) With all RCS cold leg temperatures ≥ 500 $^0$F, and RCS boron concentration ≤ the ARO critical boron concentration, when the Rod Control System is capable of rod withdrawal, or one or more rods not fully inserted.

# 3.3A
# Reactor Trip System Instrumentation

## JUSTIFICATIONS FOR DEVIATION

## *ITS 3.3.1 Reactor Trip System Instrumentation*

JUSTIFICATION FOR DEVIATION (JFD)

1. The ISTS Action Condition L is only applicable to ISTS RTS Function 11.a , Reactor Coolant Pump (RCP) Breaker Position, Single Loop on Table 3.3.1-1. This ISTS Function is required operable in Mode 1 above the P-8 setpoint (approximately 50% RTP in the ISTS, or 30% RTP for BVPS). The ISTS Function causes a reactor trip in Mode 1 above the P-8 setpoint whenever a single RCP Breaker opens. The BVPS design does not include an RTS Function that corresponds to ISTS RTS Function 11.a. The BVPS specific RCP Breaker Position Function consists of a two loop Function only that corresponds to the ISTS RTS Function 11.b. The BVPS RCP Breaker Position Function (and ISTS RTS Function 11b) cause a reactor trip when two RCP breakers are open above the P-7 setpoint (approximately 10 % RTP). Consistent with the ISTS RTS Function 11b, the BVPS Function is required operable above P-7. Also, consistent with the ISTS, Action Condition K (not L) is applicable to Functions required operable above the P-7 setpoint (including the BVPS specific RCP Breaker Position Function). Therefore, in the BVPS specific version of ISTS 3.3.1 Action Condition L (which only applies to an RCP Breaker Position RTS Function required operable above P-8) is not used for any RTS Functions and is deleted from the proposed BVPS ITS 3.3.1. All subsequent ISTS Action Conditions are re-lettered to reflect the deletion of Condition L. The re-lettering of Action Conditions has no technical impact on the proposed BVPS version of ISTS 3.3.1.
2. Not used.
3. ISTS Surveillance SR 3.3.1.2 requires that the results of the calorimetric heat balance calculation be compared to the Nuclear Instrumentation System channel output. The ISTS surveillance is modified by Note 2 which states that the surveillance is not required to be performed until [12] hours after thermal power is ≥ 15% RTP. The 12-hour ISTS requirement is bracketed. The corresponding CTS surveillance requirement is identified on Table 4.3-1 as a daily (24 hour) channel calibration modified by Note 2 which states "Heat balance only, above 15 percent of RATED THERMAL POWER." The CTS requirement is similar to the ISTS requirement in intent and purpose but does not require that the surveillance be performed within a specific time (other than the 24 hour surveillance frequency) after exceeding 15% RTP as does the ISTS. The CTS is currently interpreted such that the surveillance is performed within 24 hours after power has exceeded 15% RTP. As such, the CTS has been revised to incorporate a specific time limit similar to the ISTS but based on the current BVPS practice. The proposed BVPS ITS time limit for performing this surveillance is 24 hours after exceeding 15% RTP. The proposed change to the ISTS limit of 12 hours is acceptable considering that the CTS does not currently specify any time limit (other than 24 hours) and that the proposed time limit is still sufficiently short to ensure the surveillance is performed in a timely manner after plant startup. The proposed change conforms to the ISTS requirement for a Note specifying a time limit in the surveillance and is also consistent with the current BVPS TS and practice.

4. ISTS surveillance SR 3.3.1.3 contains a note that provides a time limit for performing the surveillance after the specified RTP is exceeded. The bracketed ISTS time limit is 24 hours. The corresponding CTS surveillance requirement as described by Note 3 on CTS Table 4.3-1 does not contain a time limit other than the 31 EFPD surveillance frequency. As such, the CTS would not require this surveillance to be complete until 31 EFPD after exceeding the specified RTP. The ISTS time limit in SR 3.3.1.3 is revised from bracketed 24 hours to 7 days. SR 3.3.1.3 is performed every 31 EFPD to ensure that the excore channel ΔI input to AFD and the f(ΔI) inputs to the Overtemperature ΔT reactor trip Function are maintained and calibrated consistent with the incore detector measurements.

   The proposed time limit is reasonable considering the actual time to perform a full core flux map at full power or multiple flux maps over a range of power distributions at part power, analyze the resultant data and calculate new excore detector calibration currents, revise the Nuclear Instrumentation System (NIS) excore calibration procedures and implement the new calibration data in each power range and Overtemperature ΔT protection channel. The proposed 7-day time allowance for performing the surveillance is also consistent with the time allowance for performing the AFD surveillance SR 3.2.3.1 which requires calibrated excore channel ΔI indications. The proposed change is acceptable because it is more restrictive than the CTS and ensures the initial performance of the surveillance will be sufficiently prompt while providing adequate time for performing the surveillance. This proposed change to the ISTS surveillance requirement has been previously approved by the NRC for a Westinghouse plant of very similar design to BVPS (Farley Nuclear Plant) in their ISTS conversion license amendment.

5. ISTS Surveillances SR 3.3.1.10, SR 3.3.1.11, and SR 3.3.1.12 all require a channel calibration to be performed every 18 months. The only difference between the surveillances is the Notes that modify each surveillance. SR 3.3.1.10 is modified by a Note that requires a verification that time constants are adjusted to the prescribed value. SR 3.3.1.11 is modified by a Note that states neutron detectors are excluded from the channel calibration. SR 3.3.1.12 is modified by a note that requires the surveillance to include verification of the RCS RTD bypass loop flow rate. The ISTS also includes 3 separate Bases for each of these surveillances that contain additional information pertaining to each Note.

   The proposed BVPS ITS only contains a single channel calibration surveillance that is modified by two notes. This change to the ISTS makes the presentation of the surveillance more consistent with the CTS. The proposed BVPS channel calibration surveillance contains the Notes applicable to time constants and neutron detectors. The elimination of the note requiring the RTD bypass flow to be verified is acceptable because the current BVPS design no longer includes an RTD bypass loop for which flow must be verified. As such, ISTS SR 3.3.1.12 does not apply to the BVPS design and is deleted from the proposed BVPS ITS.

   The proposed BVPS ITS single channel calibration surveillance contains the Notes applicable to ISTS SRs 3.3.1.10 and 3.3.1.11. The surveillance notes are applicable to instrumentation channels that contain neutron detectors or have time constants specified in their allowable values or trip setpoint requirements. The Notes do not affect other instrumentation that do not have neutron detectors or time constants associated with them. Therefore, separate surveillances for each Note are unnecessary to preserve the intent and purpose of the channel calibration surveillance requirements. In other TS, the ISTS only includes separate requirements specifying the same surveillance when the frequency for each of the surveillances is different. Many other surveillances in the ISTS are modified by multiple notes similar to those proposed in the BVPS ITS single channel calibration surveillance. The inclusion of separate requirements specifying the same surveillances with the same frequency in the RTS specification is unusual and increases the size and complexity of a TS that is already quite large and complex without contributing a significant benefit. In addition, the ISTS contains repetitive Bases descriptions for each of the channel calibration surveillances. In the proposed BVPS ITS, the Bases describing the channel calibration surveillance and the Notes are combined within a single SR bases which provides additional clarification regarding the application of the Notes and condenses the repetitive ISTS Bases into a single description for the channel calibration requirement.

The proposed change to the ISTS simplifies the presentation of the channel calibration requirements consistent with similar surveillance requirements in other ISTS Specifications and with the CTS requirements without introducing a technical change to the intent or purpose of the ISTS.

6. ISTS surveillance SR 3.3.1.3 is modified by a note that requires the surveillance to be performed within a specified time after Thermal Power is ≥ [15]% RTP. The proposed change revises the bracketed power level specified in the ISTS surveillance to 50% RTP instead of 15% RTP. The corresponding CTS surveillance also specifies a 15% power level but would allow up to 31 EFPD after exceeding this power level for the surveillance to be performed. Thus, the CTS would allow sufficient time to routinely perform this surveillance at power levels ≥ 50% RTP.

   The proposed change affects the initial performance of the surveillance after a plant startup from refueling or after a startup if the 31 EFPD Frequency has expired. The surveillance requires the comparison of the excore detector channels to the data from an incore flux map. Adjustment (calibration) of the excore channels is required if the limit between the excore and incore measurements specified in the surveillance is exceeded. The proposed change makes the specified power levels in the two ITS surveillances that require excore/incore normalization the same (ITS SR 3.3.1.3 and ITS SR 3.3.1.9). The ISTS surveillance 3.3.1.6 (BVPS ITS SR 3.3.1.9) requires an additional incore/excore normalization to be performed and is required at ≥ 50% RTP. As the CTS surveillance allows up to 31 EFPD before the surveillance must be performed, and the plant reaches powers ≥ 50% RTP in relatively short time after exceeding 15% RTP, the surveillance is normally performed at power levels above 50%. In addition, the establishment of the correct power range channel ΔI indications (required by these surveillances) is directly related to providing accurate AFD indication. The performance of this surveillance at ≥ 50% RTP is more consistent with the Applicability (power level) specified for AFD and meeting the AFD surveillance criteria. In addition, the accuracy of the surveillance results improve as power is increased. As such, the allowance to perform this surveillance at a higher power also helps to ensure that the excore power range channels are accurately calibrated to the incore detector readings.

The proposed change is acceptable because it makes the TS requirements for performing this surveillance (including the AFD requirements) internally consistent. In addition, the proposed change is acceptable because it is also consistent with obtaining the most accurate results for calibration of the excore channels and it does not delay the actual performance of the surveillance as allowed by the CTS (up to 31 EFPD after power exceeds 15% RTP). The proposed change has also been previously approved by the NRC for a Westinghouse plant of very similar design to BVPS (Farley Nuclear Plant) in their ISTS conversion license amendment.

7. ISTS surveillance SR 3.3.1.6 requires the excore nuclear instrumentation system (NIS) channels be calibrated to agree with incore detector measurements. The ISTS surveillance is required to be performed within [24] hours (bracketed) after power exceeds 50% RTP and every [92] EFPD (bracketed) afterward. The BVPS CTS does not contain a surveillance requirement that corresponds to ISTS 3.3.1.6. The CTS surveillance described by Note 3 on Table 4.3-1 requires that the NIS be recalibrated if the absolute difference between the excore NIS and the incore measurements exceed 3%. The monthly verification and normalization of the excore channels required by the CTS surveillance address the adjustments needed for flux re-distribution with core burnup. In addition to the monthly verification of the incore/excore calibration, the CTS and ISTS require that core peaking factors be verified within the required limits every 31 EFPD. The TS required verification of peaking factors every month also helps to assure the flux re-distribution with burnup remains within design limits.

   The CTS monthly surveillance to verify the calibration of the NIS has proven adequate to ensure the NIS excore channels remain within the required calibration tolerance. The 31 EFPD CTS surveillance has been retained in the proposed BVPS ITS (SR 3.3.1.3) and will continue to provide adequate assurance that the NIS remains within the required tolerance.

   The ISTS requirement to perform this surveillance every quarter could result in quarterly power reductions for up to 3 days at a time to obtain incore data from multiple incore measurements. The additional ISTS requirement to perform this excore/incore calibration every quarter regardless of the difference between the NIS and the incore measurements is overly conservative and has not been shown by BVPS operating history to be necessary to ensure the NIS is properly calibrated.

   However, BVPS does routinely perform a calibration of the NIS as described by ISTS surveillance SR 3.3.1.6 once each refueling cycle at the beginning of core life to initially setup the NIS for the new core. Because variations in core design and fuel assembly manufacturing can influence core power distributions, a complete incore/excore calibration is performed at the beginning of each operating cycle. This calibration normalizes the excore channel $\Delta I$ input to AFD and the $f(\Delta I)$ input to the Overtemperature $\Delta T$ RTS Function to match the cycle-specific core power distributions. This initial calibration performed each fuel cycle and the subsequent monthly verifications (described above) have been shown by BVPS operating experience to be sufficient to ensure the NIS remains within the required calibration tolerance. As the BVPS surveillance performed once each cycle at the beginning of core life is similar to the ISTS surveillance SR 3.3.1.6, BVPS will adopt a plant specific version of the ISTS surveillance SR 3.3.1.6.

   The proposed changes to ISTS SR 3.3.1.6 to make this surveillance specific to BVPS consist of the following:

a) The ISTS surveillance frequency is revised from a bracketed 92 EFPD to "once per fuel cycle." The Bases discussion associated with the surveillance explains that the surveillance is performed at the beginning of core life to initially calibrate the NIS for the new core. The Frequency of once per cycle is appropriate for a surveillance that is based on core age or condition and not on calendar time, similar to the ISTS EFPD frequencies used elsewhere. The frequency is consistent with BVPS current practice and has proven by operating experience to be adequate to ensure the NIS is properly calibrated.

b) The ISTS note that modifies the performance of SR 3.3.1.6 requires that the performance of the surveillance be complete within [24] hours of exceeding 50% RTP. The ISTS time constraint for performing this surveillance is revised to 7 days after exceeding 50% RTP. The allowance to take up to 7 days to perform this surveillance after exceeding 50% RTP has been justified in JFD 4 above. In addition to the discussion in JFD 4 above, the performance of this surveillance must be coordinated with other beginning of life power ascension testing, plant chemistry activities, and new fuel limitations, all of which can affect the completion of the surveillance. The proposed change is acceptable because it continues to provide adequate assurance that the surveillance is performed in a timely manner and is more consistent with the current BVPS practice.

c) Consistent with the format of the ISTS the SR is renumber from SR 3.3.1.6 to SR 3.3.1.9. This change preserves the ISTS format of presenting the longer surveillance intervals later in numerical order. The subsequent surveillances SR 3.3.1.7, 3.3.1.8, and 3.3.1.9 are renumbered to accommodate this change.

Similar changes to ISTS 3.3.1.6 have been previously approved by the NRC for a Westinghouse plant of very similar design to BVPS (Farley Nuclear Plant) in their ISTS conversion license amendment.

8. ISTS surveillance SR 3.3.1.7 and ISTS SR 3.3.1.8 both contain a requirement to perform a channel operational test (COT) on the source range instrumentation. Both the ISTS surveillances have a basic 92-day frequency that is modified by different Notes. Each ISTS note contains a separate time delay for the initial performance of the required COT after entering the applicable Mode. A time delay is required as the source range instrumentation only becomes energized at the P-6 setpoint (Applicable Mode for the source range) and the surveillance can not be performed prior to energizing the source range instrumentation. In addition, ISTS SR 3.3.1.8 contains a requirement to perform the surveillance prior to startup. The corresponding CTS surveillance requirement (Table 4.3-1) for the source range instrumentation consists of a single surveillance modified by a single note (Table 4.3-1, Note 8) with a single time delay for the initial performance after entering the applicable Mode. The CTS Source range surveillance does not require a specific "prior to startup" performance. The CTS basic quarterly performance interval has proven adequate to maintain the required source range channels operable. The two ISTS surveillances have been revised (combined) to conform more closely to the single CTS surveillance including the quarterly surveillance frequency (without a prior to startup requirement) and a note providing the CTS 12 hour time delay instead of the ISTS 4 hour time delay. This change results in a single BVPS

surveillance ITS 3.3.1.6 being applied to the source range instrumentation instead of ISTS SRs 3.3.1.7 and 3.3.1.8 consistent with the current BVPS licensing basis.

The source range RTS Function is required operable in Mode 2 below P-6 and in Modes 3, 4, and 5 with the rod control system capable of rod withdrawal or one or more rods not fully inserted. The ISTS addresses the requirement for the source range to be operable in Mode 2 below P-6 in a frequency in ISTS SR 3.3.1.8 and the requirement for the source to be operable in Mode 3 and below in a surveillance note in ISTS SR 3.3.1.7. Each of these ISTS requirements contains a time delay for performing the surveillance. The corresponding CTS requirement simply addresses the source range surveillance requirements by a single note that defines the applicability of the surveillance as below P-6. By simply stating below P-6, the CTS requirement adequately addresses the requirement to perform the surveillance every 92 days when operating in Mode 2 below P-6 or in the lower Modes of the source range applicability. The single CTS Note provides one time delay effective after the applicable Mode for the source range is entered. A second Note addressing operation in Mode 3 and below with a separate time delay for performing the surveillance is not necessary. As proven by the CTS presentation of these requirements, the use of two notes in the ISTS surveillances is a presentation option that is not necessary to ensure the source range surveillance is performed when required. In addition, the ISTS presentation of the source range surveillance requirements in two different surveillances complicates the presentation of these requirements. This is especially evident in the Frequency of ISTS SR 3.3.1.8 which contains 4 separate Frequencies with two different time delays and a Note that further modifies the performance of the surveillance. By removing the source range frequency requirement from ISTS SR 3.3.1.8 and including it in the existing Note in ISTS SR 3.3.1.7, the complexity of ISTS SR 3.3.1.8 is reduced without introducing a technical change to the SR requirements and without adding complexity to ISTS SR 3.3.1.7.

The proposed change to the ISTS surveillances improves the presentation of the ISTS surveillances, maintains the CTS requirements (single note and time delay) and does not introduce a technical change to the requirements associated with the source range instrumentation.

9. ISTS SR 3.3.1.7 requires a channel operational test (COT) to be performed every 92 days. The surveillance contains a note that is only applicable to the source range instrumentation. The note is intended to provide a time delay for performing the COT that takes into account the fact that the source range instrumentation only becomes energized below the P-6 setpoint. The ISTS note provides 4 hours after entry into Mode 3 for the first performance of the required COT. The proposed change to the ISTS Note modifying ISTS SR 3.3.1.7 (BVPS ITS 3.3.1.6) includes the following:

   - The 4 hour time delay provided by the ISTS SR 3.3.1.7 is revised to 12 hours consistent with the corresponding CTS Note 8 in Table 4.3-1. A more restrictive change was made to CTS Table 4.3-1 Note 8 to make the time delay start as soon as power was reduced to below P-6 and not from Mode 3 entry. As such, the proposed change to the ISTS is consistent with the Mode applicability of the source range instrumentation (below P-6) while maintaining the CTS delay time of 12 hours. This change maintains the CTS time delay previously approved by the NRC.

- The portion of the ISTS note addressing entering Mode 3 from Mode 2 is revised such that the time delay provided by the note becomes effective after power has been reduced below P-6 consistent with the operability requirements of the source range instrumentation and with the note in ISTS SR 3.3.1.8. This change combines the separate notes in ISTS SR 3.3.1.7 and ISTS SR 3.3.1.8 into a single note more consistent with the CTS presentation of this requirement in Table 4.3-1, Note 8. See JFD 8 (above) for more discussion of this part of the change.

10. ISTS Table 3.3.1-1 contains a column of values for the Allowable Value and a column of values for the Trip Setpoint associated with each RTS Function. The corresponding CTS Table 3.3-1 does not contain the Trip Setpoint values for each RTS Function. The CTS RTS requirements only specify the Allowable Values. The Trip Setpoint values associated with the BVPS RTS Functions were relocated outside of the CTS to the Licensing Requirements Manual by a previous license amendment. In addition, the BVPS Unit 1 and Unit 2 RTS TS are being combined into a single Unit 1 and Unit 2 RTS TS. As some of the Allowable Values specified in the CTS are different for each Unit, separate Allowable Values columns for each Unit are incorporated into the ISTS Table. The Incorporation of the second Allowable Value column replaces the unneeded Trip Setpoint column and maintains the same requirements as specified in the CTS. The Allowable Values specified in the ISTS have been replaced with the BVPS CTS values.

11. BVPS ITS SRs 3.3.1.3 and 3.3.1.9 are added to the surveillances specified for the power range neutron flux high RTS Function on ISTS Table 3.3.1-1. These surveillances are also specified for the overtemperature ΔT RTS Function on Table 3.3.1-1. These surveillances require that the excore nuclear instrumentation system (NIS) be adjusted and calibrated to agree with the incore instrumentation. The incore/excore calibration requirements are necessary to assure the NIS ΔI inputs to AFD and the f(ΔI) input to the overtemperature ΔT RTS Function are accurate. As these surveillance requirements support the operability of the overtemperature ΔT RTS Function they are associated with that Function in the ISTS. However, the surveillances are required to be performed on all four excore power range channels and in a three loop plant such as BVPS only three of the four power range channels are associated with the overtemperature ΔT RTS Function. Therefore, in order to assure all four power range channels are addressed by the surveillance requirements, the surveillances have been added to the power range neutron flux high RTS Function which is associated with all four power range channels. This change to the ISTS is consistent with how the excore/incore calibration surveillance requirement is currently addressed in the CTS. As such, this change maintains the CTS requirements regarding the incore/excore calibration surveillance requirements.

12. The ISTS Conditions and surveillance requirements specified in Table 3.3.1-1 are re-lettered and re-numbered as necessary to account for other changes made to the ISTS Conditions or surveillance requirements. Each change affecting the sequence or placement of the Conditions or surveillances is discussed separately in the JFD associated with that change.

13. The ISTS required Channels specified on Table 3.3.1-1 are revised to be consistent with the corresponding BVPS CTS requirements and the BVPS design. The changes

marked in this column represent the current design/licensing basis of BVPS.

14. The ISTS specifies response time test surveillance requirements (ISTS SR 3.3.1.16) for the source range instrumentation on Table 3.3.1-1. The corresponding CTS requirements for response time testing do not include the source range instrumentation. The actual list of RTS Functions and associated response times was removed from the CTS by a previous Amendment. The specific list of RTS Functions and associated response times is maintained in the Licensing Requirements Manual (LRM). The source range instrumentation is not part of the LRM response time requirements. As such, the elimination of these test requirements from the ISTS maintains the current BVPS licensing basis.

15. The applicable Modes specified on Table 3.3.1-1 for the pressurizer pressure low and reactor coolant flow low RTS Functions are Mode 1 above P-8 (power range neutron flux) interlock (ISTS note f). The Applicable Modes for these Functions are revised to Mode 1 above the P-7 interlock (ITS note h). The proposed change is consistent with the CTS requirements and the BVPS (and most other Westinghouse Plants) design for these RTS Functions. In addition, the proposed change is consistent with the applicable Modes specified in Revision 1 of NUREG-1431 (ISTS) for these RTS Functions. The proposed change is also consistent with the Bases discussion for these RTS Functions in Revision 2 of NUREG-1431. The Applicable Modes specified in Revision 2 of ISTS Table 3.3.1-1 for these RTS Functions are not correct.

16 The ISTS RCP breaker position RTS Function specified on Table 3.3.1-1 consists of two modes of operation, single loop and two loop. The ISTS RCP breaker position trips operate such that at lower power two RCP Breakers must open to initiate a trip and at higher power only one RCP breaker must open to initiate the trip. The ISTS RTS Function uses two footnotes to describe the Applicable Mode requirements. The corresponding BVPS RTS Function operates only as a two loop trip (i.e., two RCP breakers must open to initiate a reactor trip at any power level). The BVPS trip Function is enabled by the P-7 interlock and is required operable above P-7. The BVPS version of this RTS Function only requires a single footnote to describe the Applicable Mode. The ISTS requirements specified on Table 3.3.1-1 for the RCP Breaker trip Function are revised to reflect the BVPS design and CTS requirements. The proposed change results in the RTS Function requirements being reduced to one line. The description of how the BVPS version of this RTS Function operates (two loops at all power levels above P-7) is provided in the Bases. Since there is only one mode of operation for this Function it is not necessary to describe the operation of the Function in Table 3.3.1-1 and the ISTS descriptions have been deleted. The proposed change includes the deletion of the ISTS Table 3.3.1-1 footnotes associated with this RTS Function that are not needed for the BVPS version of the Function. The deletion of these footnotes results in re-lettering subsequent footnotes.

17. ISTS Table 3.3.1-1 specifies the requirements for the SG water level low coincident with steam flow feedwater flow mismatch RTS Function (#15). This RTS Function is not part of the CTS RTS requirements. The RTS Function was removed from the BVPS Unit 1 and 2 design and deleted from the Unit 1 and 2 CTS in previous license amendments. Therefore, this Function is eliminated from the BVPS specific version of Table 3.3.1-1. The subsequent Functions are renumbered as necessary.

18. The ISTS Turbine Trip RTS Function identifies two trip Functions, a low fluid oil pressure trip and a stop valve closure trip. The BVPS Unit 1 and Unit 2 low fluid oil pressure trips are sensed from different oil systems. Unit 1 uses the turbine auto-stop oil pressure and Unit 2 uses the emergency trip header oil pressure. The ISTS Turbine Trip Function is revised to identify the two different BVPS oil pressures used for the low fluid oil pressure trip Function. The proposed change to the ISTS maintains the current BVPS design and licensing basis.

19. The ISTS specifies a bracketed channel check surveillance SR 3.3.1.1 for the P-13 RTS Function. The corresponding CTS requirements for the P-13 RTS Function does not require a channel check be performed on this RTS Function. The ISTS channel check is deleted consistent with the CTS requirements for this Function. The proposed change maintains the previously approved BVPS licensing basis for the P-13 RTS Function.

20. On the last page of ISTS Table 3.3.1-1 the Applicable Modes for several RTS Functions are modified by footnote (b) which states, "With Rod Control System capable of rod withdrawal or one or more rods not fully inserted." ISTS Footnote (b) on the last page of Table 3.3.1-1 is the same footnote that is labeled footnote (a) on the first page of Table 3.3.1-1. In addition, footnote (b) on the first page of ISTS Table 3.3.1-1 refers to Below the P-10 interlock. Footnote (b) on the last page of Table 3.3.1-1 is revised to footnote (a) consistent with the established footnote lettering on previous pages of the same Table. The proposed change corrects an error in the NUREG-1431 Table 3.3.1-1 footnotes.

21. ISTS Table 3.3.1-1 contains a reviewers note that states, "Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit." The BVPS Units are currently licensed with the Allowable Value as the only setpoint value in the TS. The CTS was revised to relocate the Trip Setpoint values to the Licensing Requirements Manual by a previous license amendment. Therefore, the BVPS compliance with the option in this Note to only have the Allowable Values in the TS has been previously reviewed and approved by the NRC. The elimination of the trip setpoint column from the ISTS RTS Specification is consistent with the current BVPS licensing basis.

22. The ISTS RTS Specification 3.3.1 contains two notes that contain the equations for the setpoints associated with the Overtemperature ΔT and Overpower ΔT RTS Functions. The generic ISTS equations are replaced with the corresponding CTS equations for BVPS Unit 1 and Unit 2. As the BVPS Units have different equations for each of these RTS Functions, the BVPS specific implementation of 3.3.1 contains 4 notes (2 per Unit) as follows:

    - Note 1 - Unit 1 Overtemperature ΔT
    - Note 2 - Unit 1 Overpower ΔT
    - Note 3 - Unit 2 Overtemperature ΔT
    - Note 4 - Unit 2 Overpower ΔT

    The Notes are referenced from the specified Allowable Values for these Functions in Table 3.3.1-1. The proposed change to the ISTS Notes maintains the current BVPS Unit specific licensing basis (i.e., the equations and variables specified in the CTS are retained without technical change).

In addition, the reference to specific page numbers for these notes in the ISTS Table 3.3.1-1 Allowable Value column is deleted. The page number reference is not required to find the uniquely numbered notes. Additionally, the inclusion of page numbers in the Allowable Values of the RTS Functions may introduce errors in the TS. Updating the Allowable Values to reflect pagination changes in the TS would be an unusual task and that could be easily overlooked.

ENCLOSURE 2

***CHANGES TO THE ISTS BASES***

MARKUP TO SHOW BVPS PLANT SPECIFIC DIFFERENCES &

JUSTIFICATION FOR DEVIATION (JFD)

FROM THE STANDARD BASES

Introduction

This enclosure contains the markup of the Improved Standard Technical Specifications (ISTS) Bases to show the changes necessary to make the ISTS Bases document specific to BVPS Units 1 and 2. Changes to the ISTS Bases are identified with a number. The number is associated with a JFD that describes the reason for the change. The markups of the ISTS Bases are followed by a document containing the numbered JFDs for the changes made to the ISTS Bases. Not every change to the ISTS Bases is identified and explained by a JFD. Changes that simply insert current Technical Specification (CTS) information into bracketed (optional) ISTS text are not typically identified with a separate JFD. Bracketed ISTS text identifies specific text that is to be replaced with the corresponding CTS information. Therefore, such changes to the ISTS Bases are self-explanatory and represent the simple transference of CTS requirements to the ISTS. Other changes to the ISTS (i.e., less obvious changes) are described by a JFD.

As the BVPS Unit 1 & 2 Technical Specifications (TS) are being combined into a single set of TS, one markup of each ISTS Bases is provided for both Unit 1 and 2. Unit differences are identified in each ISTS Bases.

In addition, the Bases in this enclosure are marked (where applicable) to show the changes to the standard text resulting from the Industry/NRC TS Task Force (TSTF) process. The TSTF revisions to the standard are marked-up and identified with the applicable TSTF number (i.e., TSTF-03, TSTF-19, etc.). Each TSTF change has its own justification associated with it as part of the Industry/NRC process. The TSTF justifications are not repeated in the BVPS ISTS conversion documentation.

B 3.3 INSTRUMENTATION

B 3.3.1 Reactor Trip System (RTS) Instrumentation

1

BASES

BACKGROUND

The RTS initiates a unit shutdown, based on the values of selected unit parameters, to protect against violating the core fuel design limits and Reactor Coolant System (RCS) pressure boundary during anticipated operational occurrences (AOOs) and to assist the Engineered Safety Features (ESF) Systems in mitigating accidents.

The protection and monitoring systems have been designed to assure safe operation of the reactor. This is achieved by specifying limiting safety system settings (LSSS) in terms of parameters directly monitored by the RTS, as well as specifying LCOs on other reactor system parameters and equipment performance.

al

al

when

may

al

2 nominal

Technical Specifications are required by 10 CFR 50.36 to contain LSSS defined by the regulation as "...settings for automatic protective devices...so chosen that automatic protective action will correct the abnormal situation before a Safety Limit (SL) is exceeded." The Analytic Limit is the limit of the process variable at which a safety action is *initiated, as established by the safety analysis, to ensure that a SL is not* exceeded. Any automatic protection action that occurs ~~on~~ reaching the Analytic Limit therefore ensures that the SL is not exceeded. However, in practice, the actual settings for automatic protective devices must be chosen to be more conservative than the Analytic Limit to account for instrument loop uncertainties related to the setting at which the automatic protective action ~~would~~ *actually* occur.

al

20

Text is deleted because it is redundant to subsequent discussions in Trip Setpoint/Allowable Value section of Bases. This level of detail not necessary for general background.

The trip setpoint is a predetermined setting for a protective device chosen to ensure automatic actuation prior to the process variable reaching the Analytic Limit and thus ensuring that the SL would not be exceeded. ~~As such, the trip setpoint accounts for uncertainties in setting the device (e.g., calibration), *uncertainties in how the device might actually perform* (e.g., repeatability), changes in the point of action of the device over time (e.g., drift during surveillance intervals), and any other factors which may influence its actual performance (e.g., harsh accident environments). In this manner, the trip setpoint plays an important role in ensuring that SLs are not exceeded. As such, the trip setpoint meets the definition of an LSSS Ref [11] and could be used to meet the requirement that they be contained in the Technical Specifications.~~

Technical Specifications contain values related to the OPERABILITY of equipment required for safe operation of the facility. OPERABLE is

BASES

BACKGROUND (continued)

defined in Technical Specifications as "...being capable of performing its safety functions(s)." For automatic protective devices, the required safety function is to ensure that a SL is not exceeded and therefore the LSSS as defined by 10 CFR 50.36 is the same as the OPERABILITY limit for these devices. ~~However, use of the trip setpoint to define OPERABILITY in~~ *Technical Specifications and its corresponding designation as the LSSS* required by 10 CFR 50.36 would be an overly restrictive requirement if it were applied as an OPERABILITY limit for the "as found" value of a protective device setting during a surveillance. This would result in Technical Specification compliance problems, as well as reports and corrective actions required by the rule which are not necessary to ensure safety. For example, an automatic protective device with a setting that has been found to be different from the trip setpoint due to some drift of the setting may still be OPERABLE since drift is to be expected. This expected drift would have been specifically accounted for in the setpoint methodology for calculating the trip setpoint and thus the automatic protective action would still have ensured that the SL would not be exceeded with the "as found" setting of the protective device. Therefore, the device would still be OPERABLE since it would have performed its safety function and the only corrective action required would be to reset the device to the trip setpoint to account for further drift during the next surveillance interval.

Text deleted because the BVPS CTS already identifies the Allowable Value as the LSSS not the trip setpoint. The trip setpoint is not part of the BVPS TS. Therefore, this text is unnecessary detail that explains something which is not applicable to BVPS (i.e., that the use of the trip setpoint as the LSSS is overly restrictive).

2

Use of the trip setpoint to define "as found" OPERABILITY and its designation as the LSSS under the expected circumstances described above would result in actions required by both the rule and Technical Specifications that are clearly not warranted. However, ~~there is also some point~~ beyond which the device would ~~have~~ not been able to perform its function due, for example, to greater than expected drift. This value needs to be specified in the Technical Specifications in order to define OPERABILITY of the devices and is designated as the Allowable Value which~~, as stated above, is the same as the LSSS~~.

For each automatic protective device there is a setting

meets the definition of an LSSS as stated in 10CFR 50.36.

The Allowable Value specified in Table 3.3.1-1 serves as the LSSS such that a channel is OPERABLE if the trip setpoint is found not to exceed the Allowable Value during the CHANNEL OPERATIONAL TEST (COT). As such, the Allowable Value differs from the trip setpoint by an amount primarily equal to the expected instrument loop uncertainties, such as drift, during the surveillance interval. In this manner, the actual setting of the device will still meet the LSSS definition and ensure that a Safety Limit is not exceeded at any given point of time as long as the device has ~~not drifted beyond that expected during the surveillance interval.~~ Note that, although the channel is "OPERABLE" under these circumstances,

20

Text deleted because it is either redundant to subsequent discussions in Trip Setpoint/Allowable Value section of Bases or is unnecessary detail that does not significantly add to the understanding of the RTS TS

BASES

BACKGROUND (continued)

2

the trip setpoint should be left adjusted to a value within the established trip setpoint calibration tolerance band, in accordance with ~~uncertainty~~ the assumptions stated in the ~~referenced setpoint methodology (as-left criteria), and confirmed to be operating within the statistical allowances of the uncertainty terms assigned~~ the BVPS Unit 1 and Unit 2 setpoint methodology for protection systems (Ref. 1). If the actual setting of the device is found to have exceeded the Allowable Value the device would be considered inoperable from a Technical Specification perspective. This requires corrective action including those actions required by 10 CFR 50.36 when automatic protective devices do not function as required.

~~[ Note: Alternatively, a TS format incorporating an Allowable Value only column may be proposed by a licensee. In this case the trip setpoint value of Table 3.3.1-1 is located in the TS Bases or in a licensee-controlled document outside the TS. Changes to the trip setpoint value would be controlled by 10 CFR 50.59 or administratively as appropriate, and adjusted per the setpoint methodology and applicable surveillance requirements. At their option, the licensee may include the trip setpoint in Table 3.3.1-1 as shown, or as suggested by the licensees' setpoint methodology or license. ]~~

During AOOs, which are those events expected to occur one or more times during the unit life, the acceptable limits are:

3

1. The Departure from Nucleate Boiling Ratio (DNBR) shall be maintained above the Safety Limit (SL) value ~~to prevent departure from nucleate boiling (DNB)~~,
2. Fuel centerline melt shall not occur, and
3. The RCS pressure ~~SL~~ of ~~2750~~ 2748.5 psia shall not be exceeded.

Operation within the SLs of Specification 2.0, "Safety Limits (SLs)," also maintains the above values and assures that offsite dose will be within the ~~10 CFR 50, and~~ 10 CFR ~~100~~ 50.67 ~~criteria~~ limits ~~during AOOs~~.

4

Accidents are events that are analyzed ~~even though~~ they are not expected to occur during the unit life. The acceptable limit during accidents is that offsite dose shall be maintained within ~~an acceptable fraction of~~ the 10 CFR ~~100~~ 50.67 limits. Different accident categories are allowed a different fraction of these limits, based on probability of occurrence. Meeting the acceptable dose limit for an accident category is considered having acceptable consequences for that event.

BASES

BACKGROUND (continued)

described in UFSAR

5

2

The RTS instrumentation is segmented into four distinct but interconnected modules as ~~illustrated in Figure [ ], FSAR~~, Chapter [7] (Ref. ~~1~~), and as identified below:

1. Field transmitters or process sensors: provide a measurable electronic signal based upon the physical characteristics of the parameter being measured,

trip device

2. Signal Process Control and Protection System, including Analog Protection System, Nuclear Instrumentation System (NIS), field contacts, and protection channel sets: provides signal conditioning, ~~bistable~~ setpoint comparison, process algorithm actuation, compatible electrical signal output to protection system devices, and control board/control room/miscellaneous indications,

3. Solid State Protection System (SSPS), including input, logic, and output bays: initiates proper unit shutdown and/or ESF actuation in accordance with the defined logic, which is based on the ~~bistable~~ outputs from the signal process control and protection system, and

trip device

4. Reactor trip switchgear, including reactor trip breakers (RTBs) and bypass breakers: provides the means to interrupt power to the control rod drive mechanisms (CRDMs) and allows the rod cluster control assemblies (RCCAs), or "rods," to fall into the core and shut down the reactor. The bypass breakers allow testing of the RTBs at power.

in some cases

<u>Field Transmitters or Sensors</u>

nominal

2

To meet the design demands for redundancy and reliability, more than one, and ~~often~~ as many as four, field transmitters or sensors are used to measure unit parameters. To account for the calibration tolerances and instrument drift, which are assumed to occur between calibrations, statistical allowances are provided in the trip setpoint and Allowable Values. The OPERABILITY of each transmitter or sensor is determined by either "as-found" calibration data evaluated during the CHANNEL CALIBRATION or by qualitative assessment of field transmitter or sensor as related to the channel behavior observed during performance of the CHANNEL CHECK.

BASES

The safety analyses and associated RTS Functions are discussed in UFSAR Chapter 14 (Unit 1) and UFSAR Chapter 15 (Unit 2) (Ref. 3).

BACKGROUND (continued)

Signal Process Control and Protection System

Generally, three or four channels of process control equipment are used for the signal processing of unit parameters measured by the field instruments. The process control equipment provides signal conditioning, comparable output signals for instruments located on the main control board, and comparison of measured input signals with setpoints established by safety analyses. ~~These setpoints are defined in FSAR, Chapter [7] (Ref. 1), Chapter [6] (Ref. 2), and Chapter [15] (Ref. 3).~~ If the measured value of a unit parameter exceeds the predetermined setpoint, an output from a ~~bistable~~ trip device is forwarded to the SSPS for decision evaluation. Channel separation is maintained up to and through the input bays. However, not all unit parameters require four channels of sensor measurement and signal processing. Some unit parameters provide input only to the SSPS, while others provide input to the SSPS, the main control board, the unit computer, and one or more control systems.

Generally, if a parameter is used only for input to the protection circuits, three channels with a two-out-of-three logic are sufficient to provide the required reliability and redundancy. If one channel fails in a direction that would not result in a partial Function trip, the Function is still OPERABLE with a two-out-of-two logic. If one channel fails, such that a partial Function trip occurs, a trip will not occur and the Function is still OPERABLE with a one-out-of-two logic.

Generally, if a parameter is used for input to the SSPS and a control function, four channels with a two-out-of-four logic are sufficient to provide the required reliability and redundancy. The circuit must be able to withstand both an input failure to the control system, which may then require the protection function actuation, and a single failure in the other channels providing the protection function actuation. Again, a single failure will neither cause nor prevent the protection function actuation. These requirements are described in IEEE-279-1971 (Ref. 4). However, exceptions to the requirement for four channels are part of the design and licensing basis of the RTS (e.g. steam generator level instrumentation). The actual number of channels required ~~for each~~ unit parameter is specified in ~~Reference 1~~ Technical Specification Table 3.3.1-1.

5

Two logic ~~channels~~ trains are required to ensure ~~no~~ single random failure of a ~~logic channel~~ train will disable the RTS. The logic ~~channels~~ trains are designed such that testing required while the reactor is at power may be accomplished without causing trip. Provisions to allow removing logic ~~channels~~ trains from service during maintenance are unnecessary because of the logic system's designed reliability.

BASES

BACKGROUND (continued)

2 nominal

trip devices

Allowable Values and RTS Setpoints

nominal

The trip setpoints used in ~~the bistables~~ are based on the analytical limits stated in Reference 1. The selection of these trip setpoints is such that adequate protection is provided when all sensor and processing time delays are taken into account. ~~To allow for calibration tolerances, instrumentation uncertainties, instrument drift, and severe environment errors for those RTS channels that must function in harsh environments as defined by 10 CFR 50.49 (Ref. 5), the Allowable Values specified in Table 3.3.1-1 in the accompanying LCO are conservative with respect to the analytical limits.~~ A detailed description of the methodology used to calculate the Allowable Values and trip setpoints, including their explicit uncertainties, is provided in ~~the "RTS/ESFAS Setpoint Methodology Study" (Ref. 6)~~ which incorporates all of the known uncertainties applicable to each channel. The magnitudes of these uncertainties are factored into the determination of each trip setpoint and corresponding Allowable Value. The trip setpoint entered into the ~~bistable~~ is more conservative than that specified by the Allowable Value (LSSS) to account for measurement errors detectable by the COT. The Allowable Value serves as the Technical Specification OPERABILITY limit for the purpose of the COT. One example of such a change in measurement error is drift during the surveillance interval. If the measured setpoint does not exceed the Allowable Value, the ~~bistable~~ is considered OPERABLE.

INSERT 1

Insert pages follow the Bases pages

20

nominal

Reference 1

trip device

nominal

2

nominal

channel

trip device

nominal

The trip setpoint is the value at which the ~~bistable~~ is set and is the expected value to be achieved during calibration. The trip setpoint value ensures the LSSS and the safety analysis limits are met for surveillance interval selected when a channel is adjusted ~~based on stated channel uncertainties~~. Any ~~bistable~~ is considered to be properly adjusted when the "as left" setpoint value is within the ~~band for CHANNEL CALIBRATION uncertainty allowance (i.e., ± rack calibration + comparator setting uncertainties). The trip setpoint value is therefore considered a "nominal" value (i.e., expressed as a value without inequalities) for the purposes of COT and CHANNEL CALIBRATION.~~

trip device with a nominal trip setpoint

to be within the calibration tolerance

calibration tolerance.

Operable RTS Functions with setpoints maintained within the Allowable Values specified in the Technical Specifications

~~Trip setpoints consistent with the requirements of the Allowable Value~~ ensure that SLs are not violated during AOOs (and that the consequences of DBAs will be acceptable, providing the unit is operated from within the LCOs at the onset of the AOO or DBA and the equipment functions as designed).

BASES

BACKGROUND (continued)

nominal trip setpoint calibration tolerance specified in plant procedures.

2

Each channel of the process control equipment can be tested on line to verify that the signal or setpoint accuracy is within the ~~specified allowance requirements of Reference 2~~. Once a designated channel is taken out of service for testing, a simulated signal is injected in place of the field instrument signal. The process equipment for the channel in test is then tested, verified, and calibrated. SRs for the channels are specified in the SRs section.

inputs from field contacts, control board switches and

Solid State Protection System

5

The SSPS equipment is used for the decision logic processing of ~~outputs from~~ the signal processing equipment bistables. To meet the redundancy requirements, two trains of SSPS, each performing the same functions, are provided. If one train is taken out of service for ~~maintenance or~~ test purposes, the second train will provide reactor trip and/or ESF actuation for the unit. If both trains are taken out of service or placed in test, a reactor trip will result. Each train is packaged in its own cabinet for physical and electrical separation to satisfy separation and independence requirements. The system has been designed to trip in the event of a loss of power, directing the unit to a safe shutdown condition.

The SSPS performs the decision logic for actuating a reactor trip or ESF actuation, generates the electrical output signal that will initiate the required trip or actuation, and provides the status, permissive, and annunciator output signals to the main control room of the unit.

input signals from field contacts, control board switches and

5

The bistable outputs from the signal processing equipment are sensed by the SSPS equipment and combined into logic matrices that represent combinations indicative of various unit upset and accident transients. If a required logic matrix combination is completed, the system will initiate a reactor trip or send actuation signals via master and slave relays to those components whose aggregate Function best serves to alleviate the condition and restore the unit to a safe condition. Examples are given in the Applicable Safety Analyses, LCO, and Applicability sections of this Bases.

5

Two

Reactor Trip Switchgear

connected in series

either

~~The~~ RTBs are ~~in~~ the electrical power supply line from the control rod drive motor generator set power supply to the CRDMs. Opening of the RTBs interrupts power to the CRDMs, which allows the shutdown rods and control rods to fall into the core by gravity. Each RTB is equipped with a bypass breaker to allow testing of the RTB while the unit is at power.

BASES

BACKGROUND (continued)

During normal operation the output from the SSPS is a voltage signal that energizes the undervoltage coils in the RTBs and bypass breakers, if in use. When the required logic matrix combination is completed, the SSPS output voltage signal is removed, the undervoltage coils are de-energized, the breaker trip lever is actuated by the de-energized undervoltage coil, and the RTBs and bypass breakers are tripped open. This allows the shutdown rods and control rods to fall into the core. In addition to the de-energization of the undervoltage coils, each ~~breaker~~ RTB is also equipped with a shunt trip device that is energized to trip the breaker open upon receipt of a reactor trip signal from the SSPS. Either the undervoltage coil or the shunt trip mechanism is sufficient by itself, thus providing a diverse trip mechanism. The RTB bypass breakers are also equipped with a shunt trip device; however, manual actuation (local or remote) is required to energize this trip mechanism on the bypass breakers.

5

The decision logic matrix Functions are ~~described~~ contained in the functional diagrams included in Reference 2. In addition to the reactor trip or ESF, these diagrams also ~~describe~~ illustrate the various "permissive interlocks" that are associated ~~with~~ unit conditions. Each train has a built in testing device ~~that~~ can automatically test the selected decision logic matrix Functions ~~and the actuation devices~~ while the unit is at power. When any one train is taken out of service for testing, the other train is capable of providing unit monitoring and protection until the testing has been completed. The testing device is semiautomatic to minimize testing time.

19

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

The RTS functions to maintain the SLs during all AOOs and mitigates the consequences of DBAs in all MODES in which the Rod Control System is capable of rod withdrawal or one or more rods are not fully inserted.

Each of the analyzed accidents and transients can be detected by one or more RTS Functions. The accident analysis described in Reference 3 takes credit for most RTS trip Functions. RTS trip Functions not explicitly ~~specifically~~ credited in the accident analysis ~~are qualitatively~~ may be implicitly credited in the safety analysis and the NRC staff approved licensing basis for the unit. These RTS trip Functions may provide protection for conditions that do not ~~require~~ dynamic transient analysis ~~to demonstrate Function performance. They may also~~ not explicitly analyzed and may be anticipatory in nature or serve as backups to RTS trip Functions that ~~were~~ are explicitly credited in the accident analysis to provide defense in depth.

5

The LCO requires all instrumentation performing an RTS Function, listed in Table 3.3.1-1 in the accompanying LCO, to be OPERABLE. A channel is OPERABLE ~~with a trip setpoint value outside its calibration tolerance band~~ provided the trip setpoint "as-found" value does not exceed its associated Allowable Value and provided the trip setpoint "as-left" value is adjusted to a value within the "as-left" calibration tolerance band of the

2

BASES

CTS Bases

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

2

provided that the ± calibration tolerance band remains the same and the Allowable Value is administratively controlled accordingly in the conservative direction to meet the assumptions of the setpoint methodology. The conservative direction is established by the direction of the inequality applied to the Allowable Value.

nominal trip setpoint. A trip setpoint may be set more conservative than the nominal trip setpoint as necessary in response to plant conditions. Failure of any instrument renders the affected channel(s) inoperable and reduces the reliability ~~of the~~ affected Functions.

mav

The LCO generally requires OPERABILITY of four or three channels in each instrumentation Function, two channels of Manual Reactor Trip in each logic Function, and two trains in each Automatic Trip Logic Function. Four OPERABLE instrumentation channels in a two-out-of-four configuration ~~are~~ required when one RTS channel is also used as a ~~control~~ system input. This configuration accounts for the possibility of the shared channel failing in such a manner that it creates a transient that requires RTS action. In this case, the RTS will still provide protection, even with random failure of one of the other three protection channels. Three OPERABLE instrumentation channels in a two-out-of-three configuration are generally required when there is no potential for control system and protection system interaction that could simultaneously create a need for RTS trip and disable one RTS channel. The two-out-of-three and two-out-of-four configurations allow one channel to be tripped during maintenance or testing without causing a reactor trip. Specific exceptions to the above general philosophy ~~exist and~~ are discussed below.

may be

However, exceptions to these requirements are part of the current licensing and design basis (e.g., in the steam generator level instrumentation a median selector switch is utilized to provide functional separation between the protection and control systems instead of a fourth level instrument channel). The

5

Reactor Trip System Functions

The safety analyses and OPERABILITY requirements applicable to each RTS Function are discussed below:

1. Manual Reactor Trip

5

The Manual Reactor Trip feature is not credited by any safety analyses.

The Manual Reactor Trip ensures that the control room operator can initiate a reactor trip at any time by using either of two reactor trip switches in the control room. A Manual Reactor Trip accomplishes the same results as any one of the automatic trip Functions. It is used by the reactor operator to shut down the reactor ~~whenever any parameter is rapidly trending toward its Trip Setpoint~~.

manually

The LCO requires two Manual Reactor Trip channels to be OPERABLE. Each channel is controlled by a manual reactor trip switch. Each channel activates the reactor trip breaker in both trains. Two independent channels are required to be OPERABLE so that no single random failure will disable the Manual Reactor Trip Function.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

In MODE 1 or 2, manual initiation of a reactor trip must be OPERABLE. These are the MODES in which the shutdown rods and/or control rods are partially or fully withdrawn from the core. In MODE 3, 4, or 5, the manual initiation Function must also be OPERABLE if one or more shutdown rods or control rods are withdrawn or the Rod Control System is capable of withdrawing the shutdown rods or the control rods. In this condition, inadvertent control rod withdrawal is possible. In MODE 3, 4, or 5, manual initiation of a reactor trip does not have to be OPERABLE if the Rod Control System is not capable of withdrawing the shutdown rods or control rods and if all rods are fully inserted. If the rods cannot be withdrawn from the core, or all of the rods are inserted, there is no need to be able to trip the reactor. In MODE 6, neither the shutdown rods nor the control rods are permitted to be withdrawn and the CRDMs are disconnected from the control rods and shutdown rods. Therefore, the manual initiation Function is not required.

, except for specific activities such as drag testing performed under administrative controls,

5

typically

2. Power Range Neutron Flux

One NIS power range detector provides input to the Rod Control System and (for Unit 2 only) the Steam Generator (SG) Water Level Control System.

5

The NIS power range detectors are located external to the reactor vessel and measure neutrons leaking from the core. ~~The NIS power range detectors provide input to the Rod Control System and the Steam Generator (SG) Water Level Control System.~~ Therefore, the actuation logic must be able to withstand an input failure to the control system, which may then require the protection function actuation, and a single failure in the other channels providing the protection function actuation. Note that this Function also provides a signal to prevent automatic and manual rod withdrawal prior to initiating a reactor trip. Limiting further rod withdrawal may terminate the transient and eliminate the need to trip the reactor.

CTS

As such, the power range instrument channels are combined in a two-out-of-four trip logic.

(for Unit 2)

a. Power Range Neutron Flux - High

fast

5

that could potentially lead to a violation of the safety analysis limit DNBR during power operation.

The Power Range Neutron Flux - High trip Function ensures that protection is provided, from all power levels, against a positive reactivity excursion ~~leading to DNB during power operations~~. These can be caused by rod withdrawal or reductions in RCS temperature.

The LCO requires all four of the Power Range Neutron Flux - High channels to be OPERABLE.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

In MODE 1 or 2, when a positive reactivity excursion could occur, the Power Range Neutron Flux - High trip must be OPERABLE. This Function will terminate the reactivity excursion and shut down the reactor prior to reaching a power level that could damage the fuel. In MODE 3, 4, 5, or 6, the NIS power range detectors cannot detect neutron levels in this range. In these MODES, the Power Range Neutron Flux - High does not have to be OPERABLE because the reactor is shut down and reactivity excursions into the power range are extremely unlikely. Other RTS Functions and administrative controls provide protection against reactivity additions when in MODE 3, 4, 5, or 6.

TSTF-453

and in {MODE 2 with keff ≥ 1.0, MODE 2, with keff < 1.0, and all RCS cold leg temperatures ≥ {500} °F, and RCS boron concentration ≤ the ARO critical boron concentration when the Rod Control System is capable of rod withdrawal, or one or more rods not fully inserted, and in MODE 3 with all RCS cold let temperatures ≥ {500} °F, and the RCS boron concentration is ≤ the ARO critical boron concentration when the Rod Control System is capable of rod withdrawal, or one or more rods are not fully inserted,

b. Power Range Neutron Flux - Low

The LCO requirement for the Power Range Neutron Flux - Low trip Function ensures that protection is provided against a positive reactivity excursion from low power or subcritical conditions.

The LCO requires all four of the Power Range Neutron Flux - Low channels to be OPERABLE.

In MODE 1, below the Power Range Neutron Flux (P-10 setpoint), ~~and in MODE 2,~~ the Power Range Neutron Flux - Low trip must be OPERABLE. This Function may be manually blocked by the operator when two out of four power range channels are greater than ~~approximately 10% RTP (P-10 setpoint)~~. This Function is automatically unblocked when three out of four power range channels are below the P-10 setpoint. Above the P-10 setpoint, positive reactivity additions are mitigated by the Power Range Neutron Flux - High trip Function.

7

the P-10 setpoint specified in the LRM

In MODE 3, 4, 5, or 6, the Power Range Neutron Flux - Low trip Function does not have to be OPERABLE because the reactor is shut down and the NIS power range detectors cannot detect neutron levels in this range. Other RTS trip Functions and administrative controls provide protection against positive reactivity additions or power excursions in MODE 3, 4, 5, or 6.

TSTF-453

with an RCS cold leg temperature < 500°F,

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

- High Positive

3. Power Range Neutron Flux Rate

5

The Power Range Neutron Flux Rate trips use the same channels as discussed for Function 2 above.

s

~~a. Power Range Neutron Flux - High Positive Rate~~

Although this Function is not explicitly credited in the safety analyses as a primary reactor trip,

applicable acceptance

5

The Power Range Neutron Flux - High Positive Rate trip Function ensures that protection is provided against rapid increases in neutron flux that are characteristic of an RCCA drive rod housing rupture and the accompanying ejection of the RCCA. This Function compliments the Power Range Neutron Flux - High and Low Setpoint trip Functions to ensure that the criteria are met for a rod ejection from the power range.

The LCO requires all four of the Power Range Neutron Flux - High Positive Rate channels to be OPERABLE.

In MODE 1 or 2, when there is a potential to add a large amount of positive reactivity from a rod ejection accident (REA), the Power Range Neutron Flux - High Positive Rate trip must be OPERABLE. In MODE 3, 4, 5, or 6, the Power Range Neutron Flux - High Positive Rate trip Function does not have to be OPERABLE because other RTS trip Functions and administrative controls will provide protection against positive reactivity additions. Also, since only the shutdown banks ~~may be~~ withdrawn in MODE 3~~, 4, or 5,~~ the remaining complement of control bank worth ensures a sufficient degree of SDM in the event of an REA. In MODE 6, no rods are withdrawn and the SDM is increased during refueling operations. The reactor vessel head is also removed or the closure bolts are detensioned preventing any pressure buildup. In addition, the NIS power range detectors cannot detect neutron levels present in this MODE.

5

are fully

for reactor startup

For the majority of the time the plant is in MODE 6

, except for specific activities such as drag testing performed under administrative controls,

5

~~b. Power Range Neutron Flux - High Negative Rate~~

~~The Power Range Neutron Flux - High Negative Rate trip Function ensures that protection is provided for multiple rod drop accidents. At high power levels, a multiple rod drop accident could cause local flux peaking that would result in an unconservative local DNBR. DNBR is defined as the ratio of the heat flux required to cause a DNB at a particular location in~~

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

5

~~the core to the local heat flux. The DNBR is indicative of the margin to DNB. No credit is taken for the operation of this Function for those rod drop accidents in which the local DNBRs will be greater than the limit.~~

~~The LCO requires all four Power Range Neutron Flux - High Negative Rate channels to be OPERABLE.~~

~~In MODE 1 or 2, when there is potential for a multiple rod drop accident to occur, the Power Range Neutron Flux - High Negative Rate trip must be OPERABLE. In MODE 3, 4, 5, or 6, the Power Range Neutron Flux - High Negative Rate trip Function does not have to be OPERABLE because the core is not critical and DNB is not a concern. Also, since only the shutdown banks may be withdrawn in MODE 3, 4, or 5, the remaining complement of control bank worth ensures a sufficient degree of SDM in the event of an REA. In MODE 6, no rods are withdrawn and the required SDM is increased during refueling operations. In addition, the NIS power range detectors cannot detect neutron levels present in this MODE.~~

4. Intermediate Range Neutron Flux

5

The Intermediate Range Neutron Flux trip Function ensures that protection is provided against an uncontrolled RCCA bank rod withdrawal accident from a subcritical condition during startup. This trip Function provides redundant protection to the Power Range Neutron Flux - Low Setpoint trip Function. The NIS intermediate range detectors are located external to the reactor vessel and measure neutrons leaking from the core. The NIS intermediate range detectors do not provide any input to control systems. Note that this Function also provides a signal to prevent automatic and manual rod withdrawal prior to initiating a reactor trip. Limiting further rod withdrawal may terminate the transient and eliminate the need to trip the reactor.

The Intermediate Range Neutron Flux trip is not credited in the safety analyses as a primary reactor trip.

The LCO requires two channels of Intermediate Range Neutron Flux to be OPERABLE. Two OPERABLE channels are sufficient to ensure no single random failure will disable this trip Function.

The trip Function is accomplished by a one-out-of-two trip logic.

CTS

Because this trip Function is important only during startup, there is generally no need to disable channels for testing while the Function

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

is required to be OPERABLE. Therefore, a third channel is unnecessary.

In MODE 1 below the P-10 setpoint, and in MODE 2 above the P-6 setpoint, when there is a potential for an uncontrolled RCCA bank rod withdrawal accident during reactor startup, the Intermediate Range Neutron Flux trip must be OPERABLE. Above the P-10 setpoint, the Power Range Neutron Flux - High Setpoint trip and the Power Range Neutron Flux - High Positive Rate trip provide core protection for a rod withdrawal accident. In MODE 2 below the P-6 setpoint, the Source Range Neutron Flux Trip provides the primary core protection for reactivity accidents. In MODE 3, 4, or 5, the Intermediate Range Neutron Flux trip does not have to be OPERABLE ~~because the~~ control rods must be fully inserted ~~and only the shutdown rods~~ may be withdrawn. ~~The reactor~~ cannot be started up in this condition. ~~The core also has~~ the required SDM to mitigate ~~the consequences~~ of a positive reactivity addition ~~accident.~~ In MODE 6, all rods are fully inserted, except for specific activities such as drag testing performed under administrative controls, and the core has an ~~a required~~ increased SDM. Also, the NIS intermediate range detectors cannot detect neutron levels present in this MODE.

in MODE 3 with the RCS temperature ≥ 500°F, the Power Range Neutron Flux - Low trip Function provides the protection for an uncontrolled RCCA bank withdrawal event from low power or subcritical conditions. In MODE 3 with any RCS cold leg temperature < 500°F and in MODES 4, and 5, LCO 3.1.10, "RCS Boron Limitations < 500 °F," requires that the RCS boron concentration be greater than the all-rods-out (ARO) critical boron concentration to ensure that sufficient SUTDOWN MARGIN is available if an uncontrolled RCCA bank withdrawal event were to occur.

5

5. Source Range Neutron Flux

5

The LCO requirement for the Source Range Neutron Flux trip Function ensures that protection is provided against an uncontrolled RCCA bank rod withdrawal accident from a subcritical condition during startup. This trip Function provides redundant protection to the Power Range Neutron Flux - Low trip Function. In MODES 3, 4, and 5, administrative controls also prevent the uncontrolled withdrawal of rods. The NIS source range detectors are located external to the reactor vessel and measure neutrons leaking from the core. The NIS source range detectors do not provide any inputs to control systems. The source range trip is the ~~only~~ RTS automatic protection function required in MODES 3 (with any RCS cold leg temperature < 500 °F), 4, and 5 when rods are capable of withdrawal or one or more rods are not fully inserted. ~~Therefore, the functional capability at the specified Trip Setpoint is assumed to be available.~~

5

INSERT 4

The Source Range Neutron Flux Function provides protection for control rod withdrawal from subcritical (during startup), boron dilution and control rod ejection events. The trip Function is accomplished by a one-out-of-two trip logic.

CTS

From CTS Bases

Alternate source range neutron flux detectors may be used in place of the primary NIS source range neutron flux detectors as long as the required source range indication and trip functions are provided by the alternate detectors.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

In MODE 2 ~~when~~ below the P-6 setpoint and in MODES 3, 4, and 5 when there is a potential for an uncontrolled RCCA bank rod withdrawal accident, the Source Range Neutron Flux trip must be OPERABLE. Two OPERABLE channels are sufficient to ensure no single random failure will disable this trip Function. Above the P-6 setpoint, the Intermediate Range Neutron Flux trip and the Power Range Neutron Flux - Low trip will provide core protection for reactivity accidents. Above the P-6 setpoint, the NIS source range detectors are de-energized.

5

the

In MODES 3, 4, and 5 with all rods fully inserted and the Rod Control ~~System not capable~~ of rod withdrawal, and in MODE 6, the outputs of the Function to RTS logic are not required OPERABLE. The requirements for the NIS source range detectors to monitor core neutron levels and provide indication of reactivity changes that may ~~occur as~~ a result of events like a boron dilution are addressed in LCO 3.3.~~9~~ "Boron Dilution ~~Protection System (BDPS),~~" for MODE 3, 4, or 5 and LCO 3.9.~~3~~ "Nuclear Instrumentation," for MODE 6.

8

2

Detection Instrumentation

6. Overtemperature ΔT

The Overtemperature ΔT trip Function is provided to ensure that the design limit DNBR is met. This trip Function also limits the range over which the Overpower ΔT trip Function must provide protection. The inputs to the Overtemperature ΔT trip include ~~all~~ pressure, coolant temperature, axial power distribution, and reactor power as indicated by loop ΔT assuming full reactor coolant flow. Protection from violating the DNBR limit is assured for those transients that are slow with respect to delays from the core to the measurement system. The Function monitors both variation in power and flow since a decrease in flow has the same effect on ΔT as a power increase. The Overtemperature ΔT trip Function uses each loop's ΔT as a measure of reactor power and is compared with a setpoint that is automatically varied with the following parameters:

- reactor coolant average temperature - the trip setpoint is varied to correct for changes in coolant density and specific heat capacity with changes in coolant temperature,

nominal

- pressurizer pressure - the trip setpoint is varied to correct for changes in system pressure, and

BASES

nominal

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

5

In order to meet this requirement with three channels of T avg and ΔT, functional separation between the protection and control systems is accomplished by the use of a median signal selector switch.

- axial power distribution - f(ΔI), the trip setpoint is varied to account for imbalances in the axial power distribution as detected by the NIS upper and lower power range detectors. If axial peaks are greater than the design limit, as indicated by the difference between the upper and lower NIS power range detectors, the trip setpoint is reduced in accordance with Note 1 of Table 3.3.1-1.

(Unit 1) and Note 3 (Unit 2)

can

Note 1 (Unit 1) and Note 3 (Unit 2) in

Dynamic compensation is included for system piping delays from the core to the temperature measurement system.

5

From CTS Table 3.3-1 Note 6

An OPERABLE hot leg channel consists of: 1) three RTDs per hot leg, or 2) two RTDs per hot leg with the failed RTD disconnected and the required bias applied.

The Overtemperature ΔT trip Function is calculated for each loop as described in ~~Note 1 of~~ Table 3.3.1-1. Trip occurs if Overtemperature ΔT is indicated in two loops. ~~At some units,~~ the pressure and temperature signals are used for other control functions. ~~For those units,~~ the actuation logic ~~must be able to~~ withstand an input failure to the control system, which may then require the protection function actuation, and a single failure in the other channels providing the protection function actuation. Note that this Function also provides a signal to generate a turbine runback prior to reaching the trip setpoint. A turbine runback will reduce turbine power and reactor power. ~~A~~ reduction in power will normally alleviate the Overtemperature ΔT condition and may prevent a reactor trip.

CTS

The trip Function is accomplished by a two-out-of-three trip logic.

three

5

The LCO requires ~~all four~~ channels of the Overtemperature ΔT trip Function to be OPERABLE ~~for two and four loop units (the LCO requires all three channels on the Overtemperature ΔT trip Function to be OPERABLE for three loop units)~~. Note that the Overtemperature ΔT Function receives input from channels shared with other RTS Functions. Failures that affect multiple Functions require entry into the Conditions applicable to all affected Functions.

a violation of the safety limit DNBR

~~In~~ MODE 1 or 2, the Overtemperature ΔT trip must be OPERABLE to prevent ~~DNB~~. In MODE 3, 4, 5, or 6, this trip Function does not have to be OPERABLE because the reactor is not operating and there is insufficient heat production to be concerned about DNB.

7. Overpower ΔT

The Overpower ΔT trip Function ensures that protection is provided to ensure the integrity of the fuel (i.e., no fuel pellet melting and less than 1% cladding strain) under all possible overpower conditions. This trip Function also limits the required range of the

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

Overtemperature ΔT trip Function and provides a backup to the Power Range Neutron Flux - High Setpoint trip. The Overpower ΔT trip Function ensures that the allowable heat generation rate (kW/ft) of the fuel is not exceeded. It uses the ΔT of each loop as a measure of reactor power with a setpoint that is automatically varied with the following parameters:

5

In order to meet this requirement with three channels of T avg and ΔT, functional separation between the protection and control systems is accomplished by the use of a median signal selector switch.

nominal

- reactor coolant average temperature - the Trip Setpoint is varied to correct for changes in coolant density and specific heat capacity with changes in coolant temperature, and
- rate of change of reactor coolant average temperature - including dynamic compensation for the delays between the core and the temperature measurement system.

(Unit 1) and Note 4 (Unit 2) in

5

From CTS Table 3.3-1 Note 6

An OPERABLE hot leg channel consists of: 1) three RTDs per hot leg, or 2) two RTDs per hot leg with the failed RTD disconnected and the required bias applied.

can

The Overpower ΔT trip Function is calculated for each loop as per Note 2 ~~of~~ Table 3.3.1-1. Trip occurs if Overpower ΔT is indicated in two loops. ~~At some units,~~ the temperature signals are used for other control functions. ~~At those units,~~ the actuation logic ~~must be able to~~ withstand an input failure to the control system, which may then require the protection function actuation and a single failure in the remaining channels providing the protection function actuation. Note that this Function also provides a signal to generate a turbine runback prior to reaching the ~~Allowable Value~~. A turbine runback will reduce turbine power and reactor power. A reduction in power will normally alleviate the Overpower ΔT condition and may prevent a reactor trip.

three

nominal Trip Setpoint

5

The LCO requires ~~four~~ channels ~~for two and four loop units (three channels for three loop units)~~ of the Overpower ΔT trip Function to be OPERABLE. Note that the Overpower ΔT trip Function receives input from channels shared with other RTS Functions. Failures that affect multiple Functions require entry into the Conditions applicable to all affected Functions.

The trip Function is accomplished by a two-out-of-three trip logic.

In MODE 1 or 2, the Overpower ΔT trip Function must be OPERABLE. These are the only times that enough heat is generated in the fuel to be concerned about the heat generation rates and overheating of the fuel. In MODE 3, 4, 5, or 6, this trip Function does not have to be OPERABLE because the reactor is not operating and there is insufficient heat production to be concerned about fuel overheating and fuel damage.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

5

8. Pressurizer Pressure

Therefore

A separate control channel

The same sensors provide input to the Pressurizer Pressure - High and - Low trips and the Overtemperature ΔT trip. ~~At some units, the Pressurizer Pressure channels are also used to~~ provide input to the Pressurizer Pressure Control System. ~~For those units~~, the actuation logic ~~must be able to~~ withstand an input failure to the control system, which may then require the protection function actuation, and a single failure in the other channels providing the protection function actuation.

s

can

a. Pressurizer Pressure - Low

The Pressurizer Pressure - Low trip Function ensures that protection is provided against violating the DNBR limit due to low pressure.

three

The LCO requires ~~four~~ channels ~~for two and four loop units (three channels for three loop units)~~ of Pressurizer Pressure - Low to be OPERABLE.

The trip Function is accomplished by a two-out-of-three trip logic.

In MODE 1, when DNB is a major concern, the Pressurizer Pressure - Low trip must be OPERABLE. This trip Function is automatically enabled on increasing power by the P-7 interlock (NIS power range P-10 or turbine ~~impulse~~ pressure greater than ~~approximately 10% of full power equivalent (~~P-13~~)~~). On decreasing power, this trip Function is automatically blocked below P-7. Below the P-7 setpoint, no conceivable power distributions can occur that would cause DNB concerns.

First Stage

CTS

7

b. Pressurizer Pressure - High

The Pressurizer Pressure - High trip Function ensures that protection is provided against overpressurizing the RCS. This trip Function operates in conjunction with the pressurizer relief and safety valves to prevent RCS overpressure conditions.

The trip Function is accomplished by a two-out-of-three trip logic.

5

three

The LCO requires ~~four~~ channels ~~for two and four loop units (three channels for three loop units)~~ of the Pressurizer Pressure - High to be OPERABLE.

The Pressurizer Pressure - High LSSS is selected to be below the pressurizer safety valve actuation pressure and above the

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

power operated relief valve (PORV) setting. This setting minimizes challenges to safety valves while avoiding an unnecessary reactor trip for those pressure increases that can be controlled by the PORVs.

In MODE 1 or 2, the Pressurizer Pressure - High trip must be OPERABLE to help prevent RCS overpressurization and minimize challenges to the relief and safety valves. In MODE 3, 4, 5, or 6, the Pressurizer Pressure - High trip Function does not have to be OPERABLE because transients that could cause an overpressure condition will be slow to occur. Therefore, the operator will have sufficient time to evaluate unit conditions and take corrective actions. Additionally, ~~low temperature overpressure protection systems provide overpressure protection when below MODE 4.~~

5

the Overpressure Protection System (OPPS) provides overpressure protection in MODE 4 and below when any RCS cold leg temperature is ≤ the OPPS enable temperature specified in the PTLR.

From allowable value in CTS Table 3.3-1

The Pressurizer Water Level - High trip Allowable Value in Table 3.3.1-1 is specified in % of instrument span.

9. Pressurizer Water Level - High

The Pressurizer Water Level - High trip Function provides a backup signal for the Pressurizer Pressure - High trip and also provides protection against water relief through the pressurizer safety valves. These valves are designed to pass steam in order to achieve their design energy removal rate. A reactor trip is actuated prior to the pressurizer becoming water solid. The LCO requires ~~three~~ channels of Pressurizer Water Level - High to be OPERABLE. The pressurizer level channels are used as input to the Pressurizer Level Control System. A fourth channel is not required to address control/protection interaction concerns. The level channels do not actuate the safety valves, and the high pressure reactor trip is set below the safety valve setting. Therefore, with the slow rate of charging available, pressure overshoot due to level channel failure cannot cause the safety valve to lift before a reactor high pressure trip.

5

The trip Function is accomplished by a two-out-of-three trip logic.

5

The Pressurizer Water Level - High trip Function is not credited in any safety analyses as the primary reactor trip.

In MODE 1, when there is a potential for overfilling the pressurizer, the Pressurizer Water Level - High trip must be OPERABLE. This trip Function is automatically enabled on increasing power by the P-7 interlock. On decreasing power, this trip Function is automatically blocked below P-7. Below the P-7 setpoint, transients that could raise the pressurizer water level will be slow and the operator will have sufficient time to evaluate unit conditions and take corrective actions.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

From allowable value in CTS Table 3.3-1

The Reactor Coolant Flow - Low trip Allowable Value in Table 3.3.1-1 is specified in % of indicated loop flow.

5

specified in the LRM

7

10. Reactor Coolant Flow - Low

The Reactor Coolant Flow - Low trip Function ensures that protection is provided against violating the DNBR limit due to low flow in one or more RCS loops, while avoiding reactor trips due to normal variations in loop flow. Above the P-7 setpoint, the reactor trip on low flow in two or more RCS loops is automatically enabled. Above the P-8 setpoint, ~~which is approximately 48% RTP~~, a loss of flow in any RCS loop will actuate a reactor trip. Each RCS loop has three flow detectors to monitor flow. The flow signals are not used for any control system input.

The LCO requires three Reactor Coolant Flow - Low channels per loop to be OPERABLE in MODE 1 above P-7.

The trip Function is accomplished by a two-out-of-three trip logic in each loop.

In MODE 1 above the P-8 setpoint, a loss of flow in one RCS loop could result in DNB conditions in the core because of the higher power level. In MODE 1 below the P-8 setpoint and above the P-7 setpoint, a loss of flow in two or more loops is required to actuate a reactor trip because of the lower power level and the greater margin to the design limit DNBR. Below the P-7 setpoint, all reactor trips on low flow are automatically blocked since there is insufficient heat production to generate DNB conditions.

consists of one set of auxiliary contacts

The

11. Reactor Coolant Pump (RCP) Breaker Position

s

~~Both~~ RCP Breaker Position trip Functions ~~operate together on two sets of auxiliary contacts, with one set~~ on each RCP breaker. These Functions anticipate the Reactor Coolant Flow - Low trips to avoid RCS heatup that would occur before the low flow trip actuates.

5

The RCP Breaker Position trip Function is not credited in any safety analyses as the primary reactor trip.

~~a. Reactor Coolant Pump Breaker Position (Single Loop)~~

~~The RCP Breaker Position (Single Loop) trip Function ensures that protection is provided against violating the DNBR limit due to a loss of flow in one RCS loop. The position of each RCP breaker is monitored. If one RCP breaker is open above the P-8 setpoint, a reactor trip is initiated. This trip Function will generate a reactor trip before the Reactor Coolant Flow - Low (Single Loop) Trip Setpoint is reached.~~

~~The LCO requires one RCP Breaker Position channel per RCP to be OPERABLE. One OPERABLE channel is sufficient for~~

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

5

this trip Function because the RCS Flow - Low trip alone provides sufficient protection of unit SLs for loss of flow events. The RCP Breaker Position trip serves only to anticipate the low flow trip, minimizing the thermal transient associated with loss of a pump.

This Function measures only the discrete position (open or closed) of the RCP breaker, using a position switch. Therefore, the Function has no adjustable trip setpoint with which to associate an LSSS.

In MODE 1 above the P-8 setpoint, when a loss of flow in any RCS loop could result in DNB conditions in the core, the RCP Breaker Position (Single Loop) trip must be OPERABLE. In MODE 1 below the P-8 setpoint, a loss of flow in two or more loops is required to actuate a reactor trip because of the lower power level and the greater margin to the design limit DNBR.

b. Reactor Coolant Pump Breaker Position (Two Loops)

The RCP Breaker Position ~~(Two Loops)~~ trip Function ensures that protection is provided against violating the DNBR limit due to a loss of flow in two or more RCS loops. The position of each RCP breaker is monitored. Above the P-7 setpoint ~~and below the P-8 setpoint~~, a loss of flow in two or more loops will initiate a reactor trip. This trip Function will generate a reactor trip before the Reactor Coolant Flow - Low (Two Loops) Trip Setpoint is reached.

As such, the trip Function is accomplished by a two-out-of-three trip logic.

The LCO requires one RCP Breaker Position channel per RCP to be OPERABLE. One OPERABLE channel is sufficient for this Function because the RCS Flow - Low trip alone provides sufficient protection of ~~unit SLs~~ for loss of flow events. The RCP Breaker Position trip serves only to anticipate the low flow trip, minimizing the thermal transient associated with loss of ~~an~~ RCP.

the DNBR limit

s

two

This Function measures only the discrete position (open or closed) of the RCP breaker, using a position switch. Therefore, the Function has no adjustable trip setpoint with which to associate an LSSS.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

5

In MODE 1 above the P-7 setpoint ~~and below the P-8 setpoint~~, the RCP Breaker Position ~~(Two Loops)~~ trip must be OPERABLE. Below the P-7 setpoint, all reactor trips on loss of flow are automatically blocked since no conceivable power distributions could occur that would cause a DNB concern at this low power level. Above the P-7 setpoint, the reactor trip on loss of flow in two RCS loops is automatically enabled. ~~Above the P-8 setpoint, a loss of flow in any one loop will actuate a reactor trip because of the higher power level and the reduced margin to the design limit DNBR.~~

As such, the trip Function is accomplished by a two-out-of-three trip logic.

12. Undervoltage Reactor Coolant Pumps

The Undervoltage RCPs reactor trip Function ensures that protection is provided against violating the DNBR limit due to a loss of flow in two or more RCS loops. The voltage to each RCP is monitored. Above the P-7 setpoint, a loss of voltage detected on two or more RCP buses will initiate a reactor trip. This trip Function will generate a reactor trip before the Reactor Coolant Flow - Low (Two Loops) Trip Setpoint is reached. Time delays are incorporated into the Undervoltage RCP channels to prevent reactor trips due to momentary electrical power transients.

The Undervoltage RCP Bus trip Function is not credited in any safety analyses as the primary reactor trip.

5

The LCO requires three Undervoltage RCP channels ~~(one per phase)~~ per bus to be OPERABLE.

In MODE 1 above the P-7 setpoint, the Undervoltage RCP trip must be OPERABLE. Below the P-7 setpoint, all reactor trips on loss of flow are automatically blocked since no conceivable power distributions could occur that would cause a DNB concern at this low power level. Above the P-7 setpoint, the reactor trip on loss of flow in two or more RCS loops is automatically enabled. This Function uses the same relays as the ESFAS Function ~~6.f~~, "Undervoltage Reactor Coolant Pump (RCP)" start of the auxiliary feedwater (AFW) pumps.

13. Underfrequency Reactor Coolant Pumps

The Underfrequency RCPs reactor trip Function ensures that protection is provided against violating the DNBR limit due to a loss of flow in two or more RCS loops from a major network frequency disturbance. An underfrequency condition will slow down the pumps, thereby reducing their coastdown time following a pump trip.

BASES

As such, the trip Function is accomplished by a two-out-of-three trip logic.

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

5

The Underfrequency RCP Bus trip Function is not credited in any safety analyses as the primary reactor trip.

The proper coastdown time is required so that reactor heat can be removed immediately after reactor trip. The frequency of each RCP bus is monitored. Above the P-7 setpoint, a loss of frequency detected on two or more RCP buses will initiate a reactor trip. This trip Function will generate a reactor trip before the Reactor Coolant Flow - Low (Two Loops) Trip Setpoint is reached. Time delays are incorporated into the Underfrequency RCPs channels to prevent reactor trips due to momentary electrical power transients.

The LCO requires three Underfrequency RCPs channels per bus to be OPERABLE.

, one

In MODE 1 above the P-7 setpoint, the Underfrequency RCPs trip must be OPERABLE. Below the P-7 setpoint, all reactor trips on loss of flow are automatically blocked since no conceivable power distributions could occur that would cause a DNB concern at this low power level. Above the P-7 setpoint, the reactor trip on loss of flow in two or more RCS loops is automatically enabled.

5

From allowable value in CTS Table 3.3-1

The SG Water level - Low Low trip Function Allowable Value in Table 3.3.1-1 is specified in % of narrow range instrument span for each SG.

14. Steam Generator Water Level - Low Low

The SG Water Level - Low Low trip Function ensures that protection is provided against a loss of heat sink and actuates the AFW System prior to uncovering the SG tubes. The SGs are the heat sink for the reactor. In order to act as a heat sink, the SGs must contain a minimum amount of water. A narrow range low low level in any SG is indicative of a loss of heat sink for the reactor. The level transmitters provide input to the SG Level Control System. Therefore, the actuation logic must be able to withstand an input failure to the control system, which may then require the protection function actuation, and a single failure in the other channels providing the protection function actuation. This Function also performs the ESFAS function of starting the AFW pumps on low low SG level.

Functional separation between the protection and control systems is accomplished by the use of a median selector switch.

three

The trip Function is accomplished by a two-out-of-three trip logic in each SG.

The LCO requires ~~four~~ channels of SG Water Level - Low Low per SG to be OPERABLE ~~for four loop units in which these channels are shared between protection and control. In two, three, and four loop units where three SG Water Levels are dedicated to the RTS, only three channels per SG are required to be OPERABLE~~.

6

In MODE 1 or 2, when the reactor requires a heat sink, the SG Water Level - Low Low trip must be OPERABLE. ~~The normal~~

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

6

~~source of water for the SGs is the Main Feedwater (MFW) System (not safety related). The MFW System is only in operation in MODE 1 or 2. The AFW System is the safety related backup source of water to ensure that the SGs remain the heat sink for the reactor. During normal startups and shutdowns, the AFW System provides feedwater to maintain SG level.~~ In MODE 3, 4, 5, or 6, the SG Water Level - Low Low Function does not have to be OPERABLE because ~~the MFW System is not in operation and~~ the reactor is not operating or even critical. ~~Decay heat removal is accomplished by the AFW System in MODE 3 and by the Residual Heat Removal (RHR) System in MODE 4, 5, or 6.~~

5

15. Steam Generator Water Level - Low, Coincident With Steam Flow/Feedwater Flow Mismatch

SG Water Level - Low, in conjunction with the Steam Flow/Feedwater Flow Mismatch, ensures that protection is provided against a loss of heat sink and actuates the AFW System prior to uncovering the SG tubes. In addition to a decreasing water level in the SG, the difference between feedwater flow and steam flow is evaluated to determine if feedwater flow is significantly less than steam flow. With less feedwater flow than steam flow, SG level will decrease at a rate dependent upon the magnitude of the difference in flow rates. There are two SG level channels and two Steam Flow/Feedwater Flow Mismatch channels per SG. One narrow range level channel sensing a low level coincident with one Steam Flow/Feedwater Flow Mismatch channel sensing flow mismatch (steam flow greater than feed flow) will actuate a reactor trip.

The LCO requires two channels of SG Water Level - Low coincident with Steam Flow/Feedwater Flow Mismatch.

In MODE 1 or 2, when the reactor requires a heat sink, the SG Water Level - Low coincident with Steam Flow/Feedwater Flow Mismatch trip must be OPERABLE. The normal source of water for the SGs is the MFW System (not safety related). The MFW System is only in operation in MODE 1 or 2. The AFW System is the safety related backup source of water to ensure that the SGs remain the heat sink for the reactor. During normal startups and shutdowns, the AFW System provides feedwater to maintain SG level. In MODE 3, 4, 5, or 6, the SG Water Level - Low coincident with Steam Flow/Feedwater Flow Mismatch Function does not have to be OPERABLE because the MFW System is not in operation and the

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

5

~~reactor is not operating or even critical. Decay heat removal is accomplished by the AFW System in MODE 3 and by the RHR System in MODE 4, 5, or 6. The MFW System is in operation only in MODE 1 or 2 and, therefore, this trip Function need only be OPERABLE in these MODES.~~

15 ~~16~~. Turbine Trip

a. Turbine Trip - Low Fluid Oil Pressure

5

7

specified in the LRM

Unit 1 Auto Stop oil pressure and three pressure switches monitor the Unit 2 Emergency Trip Header pressure.

The Turbine Trip - Low Fluid Oil Pressure trip Function anticipates the loss of heat removal capabilities of the secondary system following a turbine trip. This trip Function acts to minimize the pressure/temperature transient on the reactor. Any turbine trip from a power level below the P-9 setpoint, ~~approximately 50% power~~, will not actuate a reactor trip. Three pressure switches monitor the ~~control oil pressure in the Turbine Electrohydraulic Control System~~. A low pressure condition sensed by two-out-of-three pressure switches will actuate a reactor trip. These pressure switches do not provide any input to the control system. The unit is designed to withstand a complete loss of load and not sustain core damage or challenge the RCS pressure limitations. Core protection is provided by the Pressurizer Pressure - High trip Function and RCS integrity is ensured by the pressurizer safety valves.

5

The Turbine Trip Function is not credited in any safety analyses as the primary reactor trip.

The LCO requires three channels of Turbine Trip - Low Fluid Oil Pressure to be OPERABLE in MODE 1 above P-9.

Below the P-9 setpoint, a turbine trip does not actuate a reactor trip. In MODE 2, 3, 4, 5, or 6, there is no potential for a turbine trip, and the Turbine Trip - Low Fluid Oil Pressure trip Function does not need to be OPERABLE.

b. Turbine Trip - Turbine Stop Valve Closure

above

7

specified in the LRM

The Turbine Trip - Turbine Stop Valve Closure trip Function anticipates the loss of heat removal capabilities of the secondary system following a turbine trip from a power level ~~below~~ the P-9 setpoint~~, approximately 50% power~~. ~~This action~~ will not actuate a reactor trip. The trip Function anticipates the loss of secondary heat removal capability that occurs when the stop valves close. Tripping the reactor in anticipation of loss of

Below the P-9 setpoint, the Turbine Trip Function

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

secondary heat removal acts to minimize the pressure and temperature transient on the reactor. This trip Function will not and is not required to operate in the presence of a single channel failure. The unit is designed to withstand a complete loss of load and not sustain core damage or challenge the RCS pressure limitations. Core protection is provided by the Pressurizer Pressure - High trip Function, and RCS integrity is ensured by the pressurizer safety valves. This trip Function is diverse to the Turbine Trip - Low Fluid Oil Pressure trip Function. Each turbine stop valve is equipped with one limit switch that inputs to the RTS. If all four limit switches indicate that the stop valves are all closed, a reactor trip is initiated.

5

The Turbine Trip Function is not credited in any safety analyses as the primary reactor trip

The LSSS for this Function is set to assure channel trip occurs when the associated stop valve is completely closed.

The setpoint for the Turbine Trip - Turbine Stop Valve Closure channels is the only RTS setpoint that is not a nominal trip setpoint with a calibration tolerance. The setpoint for this Function contains an inequality similar to the Allowable Value in the Technical Specification. The trip setpoint is adjusted to be consistent with the trip setpoint value specified in the LRM in lieu of adjusting the setpoint to be within an established calibration tolerance band.

The LCO requires four Turbine Trip - Turbine Stop Valve Closure channels, one per valve, to be OPERABLE in MODE 1 above P-9. All four channels must trip to cause reactor trip.

Below the P-9 setpoint, a load rejection can be accommodated by the Steam Dump System. In MODE 2, 3, 4, 5, or 6, there is no potential for a load rejection, and the Turbine Trip - Stop Valve Closure trip Function does not need to be OPERABLE.

16

~~17~~. Safety Injection Input from Engineered Safety Feature Actuation System

5

Typically,

The SI Input from ESFAS ensures that if a reactor trip has not already been generated by the RTS, the ESFAS automatic ~~actuation~~ logic will initiate a reactor trip upon any signal that initiates SI. ~~This is a condition of acceptability for the LOCA.~~ ~~However, other~~ transients and accidents take credit for varying levels of ESF performance and rely upon rod insertion, except for the most reactive rod that is assumed to be fully withdrawn, to ensure reactor shutdown. Therefore, a reactor trip is initiated every time an SI signal is present.

The large break LOCA analysis does not rely upon rod insertion and credits the voiding of the core to shutdown the reactor.

5

~~T~~rip setpoint and Allowable Values ~~are not~~ applicable to this Function. The SI Input is provided by ~~relay in~~ the ESFAS. Therefore, there is no measurement signal with which to associate an LSSS.

logic.

As the requirements for the ESFAS instrument channels, including actuation logic and Allowable Values are specified separately in LCO 3.3.2, there are no

RTS

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

The LCO requires two trains of SI Input from ESFAS to be OPERABLE in MODE 1 or 2.

A reactor trip is initiated every time an SI signal is present. Therefore, this trip Function must be OPERABLE in MODE 1 or 2, when the reactor is critical, and must be shut down in the event of an accident. In MODE 3, 4, 5, or 6, the reactor is not critical, and this trip Function does not need to be OPERABLE.

17 ~~18~~. Reactor Trip System Interlocks

Reactor protection interlocks are provided to ensure reactor trips are in the correct configuration for the current unit status. They back up operator actions to ensure protection system Functions are not bypassed during unit conditions under which the safety analysis assumes the Functions are not bypassed. Therefore, the interlock Functions do not need to be OPERABLE when the associated reactor trip functions are outside the applicable MODES. These are:

a. Intermediate Range Neutron Flux, P-6

The Intermediate Range Neutron Flux, P-6 interlock is actuated when any NIS intermediate range channel goes approximately one decade above the minimum channel reading. If both channels drop below the setpoint, the permissive will automatically be defeated. The LCO requirement for the P-6 interlock ensures that the following Functions are performed:

- on increasing power, the P-6 interlock allows the manual block of the NIS Source Range, Neutron Flux reactor trip. This prevents a premature block of the source range trip and allows the operator to ensure that the intermediate range is OPERABLE prior to leaving the source range. When the source range trip is blocked, the high voltage to the detectors is also removed, .
- on decreasing power, the P-6 interlock automatically energizes the NIS source range detectors ~~and~~ enables the NIS Source Range Neutron Flux reactor trip; and

5

- ~~on increasing power, the P-6 interlock provides a backup block signal to the source range flux doubling circuit.~~

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

5

Normally, this ~~Function is manually blocked~~ by the control ~~room operator during~~ the reactor startup.

The LCO requires two channels of Intermediate Range Neutron Flux, P-6 interlock to be OPERABLE in MODE 2 when below the P-6 interlock setpoint.

Above the P-6 interlock setpoint, the NIS Source Range Neutron Flux reactor trip will be blocked, and this Function will no longer be necessary.

In MODE 3, 4, 5, or 6, the P-6 interlock does not have to be OPERABLE because the NIS Source Range is providing core protection.

CTS

b. Low Power Reactor Trips Block, P-7

The Low Power Reactor Trips Block, P-7 interlock is actuated by input from either the Power Range Neutron Flux, P-10, or the Turbine ~~Impulse~~ First Stage Pressure, P-13 interlock. The LCO requirement for the P-7 interlock ensures that the following Functions are performed:

(1) on increasing power, the P-7 interlock automatically enables reactor trips on the following Functions:

- Pressurizer Pressure - Low,
- Pressurizer Water Level - High,
- Reactor Coolant Flow - Low (low flow in two or more RCS loops),
- RCPs Breaker Open (~~Two Loops~~ two or more RCPs),
- Undervoltage RCPs (two or more RCP buses), and
- Underfrequency RCPs (two or more RCP buses).

5

7

These reactor trips are only required when operating above the P-7 setpoint ~~(approximately 10% power)~~ as specified in the LRM for the P-10 and P-13 inputs to P-7. The reactor trips provide protection against violating the DNBR limit. Below the P-7 setpoint, the RCS is capable of

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

providing sufficient natural circulation without any RCP running.

(2) on decreasing power, the P-7 interlock automatically blocks reactor trips on the following Functions:

- Pressurizer Pressure - Low,
- Pressurizer Water Level - High,
- Reactor Coolant Flow - Low (low flow in two or more RCS loops),

5 two or more RCPs

- RCP Breaker Position (~~Two L~~oops),
- Undervoltage RCP~~s,~~ and

(two or more RCP buses)

- Underfrequency RCP~~s.~~

Trip Setpoint and Allowable Value are not applicable to the P-7 interlock because it is a logic Function and thus has no parameter with which to associate an LSSS.

The P-7 interlock is a logic Function with train and not channel identity. Therefore, the LCO requires one channel per train of Low Power Reactor Trips Block, P-7 interlock to be OPERABLE in MODE 1.

7 the P-7 setpoint

The low power trips are blocked below the P-7 setpoint and unblocked above the P-7 setpoint. In MODE 2, 3, 4, 5, or 6, this Function does not have to be OPERABLE because the interlock performs its Function when power level drops below ~~10% power~~, which is in MODE 1.

c. Power Range Neutron Flux, P-8

setpoint is specified in the LRM and is actuated

5

The Power Range Neutron Flux, P-8 interlock ~~is actuated at approximately 48% power as determined~~ by two-out-of-four NIS power range detectors. The P-8 interlock automatically enables the Reactor Coolant Flow - Low ~~and RCP Breaker Position~~ (Single Loop) reactor trips on low flow in one or more RCS loops on increasing power. The LCO requirement for this trip Function ensures that protection is provided against a loss of

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

7

the P-8 setpoint.

flow in any RCS loop that could result in DNB conditions in the core when greater than ~~approximately 48% power~~. On decreasing power, the reactor trip on low flow in any loop is automatically blocked.

The LCO requires four channels of Power Range Neutron Flux, P-8 interlock to be OPERABLE in MODE 1.

In MODE 1, a loss of flow in one RCS loop could result in DNB conditions, so the Power Range Neutron Flux, P-8 interlock must be OPERABLE. In MODE 2, 3, 4, 5, or 6, this Function does not have to be OPERABLE because the core is not producing sufficient power to be concerned about DNB conditions.

7

d. Power Range Neutron Flux, P-9

setpoint is specified in the LRM and is actuated

(Auto Stop (Unit 1) and Emergency Trip Header (Unit 2))

The Power Range Neutron Flux, P-9 interlock ~~is actuated at approximately 50% power as determined~~ by two-out-of-four NIS power range detectors. The LCO requirement for this Function ensures that the Turbine Trip - Low Fluid Oil Pressure and Turbine Trip - Turbine Stop Valve Closure reactor trips are enabled above the P-9 setpoint. Above the P-9 setpoint, a turbine trip will cause a load rejection beyond the capacity of the Steam Dump System. A reactor trip is automatically initiated on a turbine trip when it is above the P-9 setpoint, to minimize the transient on the reactor.

The LCO requires four channels of Power Range Neutron Flux, P-9 interlock to be OPERABLE in MODE 1.

In MODE 1, a turbine trip could cause a load rejection beyond the capacity of the Steam Dump System, so the Power Range Neutron Flux interlock must be OPERABLE. In MODE 2, 3, 4, 5, or 6, this Function does not have to be OPERABLE because the reactor is not at a power level sufficient to have a load rejection beyond the capacity of the Steam Dump System.

7

e. Power Range Neutron Flux, P-10

setpoint is specified in the LRM and is actuated

The Power Range Neutron Flux, P-10 interlock ~~is actuated at approximately 10% power, as determined~~ by two-out-of-four NIS power range detectors. If power level falls below ~~10% RTP~~

7

the P-10 setpoint

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

on 3 of 4 channels, the nuclear instrument trips will be automatically unblocked. The LCO requirement for the P-10 interlock ensures that the following Functions are performed:

- on increasing power, the P-10 interlock allows the operator to manually block the Intermediate Range Neutron Flux reactor trip. Note that blocking the reactor trip also blocks the signal to prevent automatic and manual rod withdrawal, (for Unit 2)
- on increasing power, the P-10 interlock allows the operator to manually block the Power Range Neutron Flux - Low reactor trip,
- on increasing power, the P-10 interlock automatically provides a backup signal to block the Source Range Neutron Flux reactor trip, and also to de-energize the NIS source range detectors,
- the P-10 interlock provides one of the two inputs to the P-7 interlock, and
- on decreasing power, the P-10 interlock automatically enables the Power Range Neutron Flux - Low reactor trip and the Intermediate Range Neutron Flux reactor trip (and rod stop).

The LCO requires four channels of Power Range Neutron Flux, P-10 interlock to be OPERABLE in MODE 1 or 2.

OPERABILITY in MODE 1 ensures the Function is available to perform its decreasing power Functions in the event of a reactor shutdown. This Function must be OPERABLE in MODE 2 to ensure that core protection is provided during a startup or shutdown by the Power Range Neutron Flux - Low and Intermediate Range Neutron Flux reactor trips. In MODE 3, 4, 5, or 6, this Function does not have to be OPERABLE because the reactor is not at power and the Source Range Neutron Flux reactor trip provides core protection.

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

From allowable value in CTS Table 3.3-1

The turbine power (P-13) Allowable Value in Table 3.3.1-1 is specified in % RTP turbine first stage pressure equivalent.

f. Turbine ~~Impulse~~ First Stage Pressure, P-13

7

The Turbine ~~Impulse~~ First Stage Pressure, P-13 interlock is actuated when the pressure in the first stage of the high pressure turbine is greater than ~~approximately 10% of the rated full power pressure~~ the P-13 setpoint specified in the LRM. This is determined by one-out-of-two pressure detectors. The LCO requirement for this Function ensures that one of the inputs to the P-7 interlock is available.

CTS

The LCO requires two channels of Turbine ~~Impulse~~ First Stage Pressure, ~~P-13~~ interlock to be OPERABLE in MODE 1.

The Turbine ~~Impulse Chamber~~ First Stage Pressure, P-13 interlock must be OPERABLE when the turbine generator is operating. The interlock Function is not required OPERABLE in MODE 2, 3, 4, 5, or 6 because the turbine generator is not operating.

13

~~19~~ 18. Reactor Trip Breakers

This trip Function applies to the RTBs exclusive of individual trip mechanisms. The LCO requires two OPERABLE trains of trip ~~breakers. A trip breaker train consists of all trip breakers associated with a single RTS logic train that are racked in, closed, and capable of supplying power to the Rod Control System. Thus, the train may consist of the main breaker, bypass breaker, or main breaker and bypass breaker, depending upon the system configuration.~~ an OPERABLE RTB. When an RTB bypass breaker is racked in and closed to bypass an RTB, the RTB is no longer capable of performing its safety function and the bypassed RTB is inoperable. The Action Condition for an inoperable RTB contains Notes that provide additional time for bypassing the RTB for surveillance testing and maintenance. A racked in and closed bypass breaker and the remaining operable RTB are actuated from the same train of RTS actuation logic. Therefore, when bypassing an RTB, the RTB trip Function is no longer single failure proof and the time an RTB can be bypassed is limited in accordance with the applicable RTB Action Condition Note. In addition, the bypass breaker is required to be OPERABLE prior to being placed in service in accordance with SR 3.3.1.4. Two OPERABLE trains ensure no single random failure can disable the RTS trip capability.

These trip Functions must be OPERABLE in MODE 1 or 2 when the reactor is critical. In MODE 3, 4, or 5, these RTS trip Functions must be OPERABLE when the Rod Control System is capable of rod withdrawal or one or more rods are not fully inserted.

~~20~~ 19. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms

The LCO requires both the Undervoltage and Shunt Trip Mechanisms to be OPERABLE for each RTB that is in service. The trip mechanisms are not required to be OPERABLE for trip breakers that are open, racked out, incapable of supplying power to the Rod Control System, or declared inoperable under Function ~~19~~ 18 above. OPERABILITY of both trip mechanisms on each breaker ensures

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

that no single trip mechanism failure will prevent opening any breaker on a valid signal.

These trip Functions must be OPERABLE in MODE 1 or 2 when the reactor is critical. In MODE 3, 4, or 5, these RTS trip Functions must be OPERABLE when the Rod Control System is capable of rod withdrawal or one or more rods are not fully inserted.

20 ~~21~~. Automatic Trip Logic

The LCO requirement for the RTBs (Functions ~~19~~ 18 and ~~20~~ 19) and Automatic Trip Logic (Function ~~21~~ 20) ensures that means are provided to automatically interrupt the power to allow the rods to fall into the reactor core. Each RTB is equipped with an undervoltage coil and a shunt trip coil to trip the breaker open when needed. Each RTB is equipped with a bypass breaker to allow testing of the trip breaker while the unit is at power. The reactor trip signals generated by the RTS Automatic Trip Logic cause the RTBs and associated bypass breakers to open and shut down the reactor.

The LCO requires two trains of RTS Automatic Trip Logic to be OPERABLE. Having two OPERABLE ~~channels~~ trains ensures that random failure of a single logic ~~channel~~ train will not prevent reactor trip.

These trip Functions must be OPERABLE in MODE 1 or 2 when the reactor is critical. In MODE 3, 4, or 5, these RTS trip Functions must be OPERABLE when the Rod Control System is capable of rod withdrawal or one or more rods are not fully inserted.

The RTS instrumentation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

25

ACTIONS

When the Required Channels in Table 3.3.1-1 are specified (e.g., on a per steam line, per loop, per SG, etc., basis), then the Condition may be entered separately for each steam line, loop, SG, etc., as appropriate.

A Note has been added to the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed in Table 3.3.1-1.

In the event a channel's trip setpoint is found nonconservative with respect to the Allowable Value, or the transmitter, instrument loop, signal processing electronics, or ~~bistable~~ trip device is found inoperable, then all affected Functions provided by that channel must be declared inoperable and the LCO Condition(s) entered for the protection Function(s) affected.

When the number of inoperable channels in a trip Function exceed those specified in one or other related Conditions associated with a trip

BASES

ACTIONS (continued)

Function, then the unit is outside the safety analysis. Therefore, LCO 3.0.3 must be immediately entered if applicable in the current MODE of operation.

---

- REVIEWER'S NOTE -

Certain LCO Completion Times are based on approved topical reports. In order for a licensee to use these times, the licensee must justify the Completion Times as required by the staff Safety Evaluation Report (SER) for the topical report.

---

A.1

Condition A applies to all RTS protection Functions. Condition A addresses the situation where one or more required channels or trains for one or more Functions are inoperable at the same time. The Required Action is to refer to Table 3.3.1-1 and to take the Required Actions for the protection functions affected. The Completion Times are those from the referenced Conditions and Required Actions.

B.1 and B.2

Condition B applies to the Manual Reactor Trip in MODE 1 or 2. This action addresses the train orientation of the SSPS for this Function. With one channel inoperable, the inoperable channel must be restored to OPERABLE status within 48 hours. In this Condition, the remaining OPERABLE channel is adequate to perform the safety function.

The Completion Time of 48 hours is reasonable considering that there are two automatic actuation trains and another manual initiation channel OPERABLE, and the low probability of an event occurring during this interval.

If the Manual Reactor Trip Function cannot be restored to OPERABLE status within the allowed 48 hour Completion Time, the unit must be brought to a MODE in which the requirement does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 additional hours (54 hours total time). The 6 additional hours to reach MODE 3 is reasonable, based on operating experience, to reach MODE 3 from full power operation in an orderly manner and without challenging unit systems. With the unit in MODE 3, ACTION C would apply to any inoperable Manual Reactor Trip Function if the Rod Control System is capable of rod withdrawal or one or more rods are not fully inserted.

BASES

ACTIONS (continued)

C.1, C.2.1, and C.2.2

Condition C applies to the following reactor trip Functions in MODE 3, 4, or 5 with the Rod Control System capable of rod withdrawal or one or more rods not fully inserted:

Manual Reactor Trip,

RTBs,

RTB Undervoltage and Shunt Trip Mechanisms, and

Automatic Trip Logic.

This action addresses the train orientation of the SSPS for these Functions. With one channel or train inoperable, the inoperable channel or train must be restored to OPERABLE status within 48 hours. If the affected Function(s) cannot be restored to OPERABLE status within the allowed 48 hour Completion Time, the unit must be placed in a MODE in which the requirement does not apply. To achieve this status, action must be initiated within the same 48 hours to ensure that all rods are fully inserted, and the Rod Control System must be placed in a condition incapable of rod withdrawal within the next hour. The additional hour provides sufficient time to accomplish the action in an orderly manner. With rods fully inserted and the Rod Control System incapable of rod withdrawal, these Functions are no longer required.

The Completion Time is reasonable considering that in this Condition, the remaining OPERABLE train is adequate to perform the safety function, and given the low probability of an event occurring during this interval.

D.1.1, D.1.2, D.2.1, D.2.2, and D.3

Condition D applies to the Power Range Neutron Flux - High Function.

5

One

~~The~~ NIS power range detectors provide s input to the Rod Control System and the SG Water Level Control System and, therefore, have a two-out-of-four trip logic. A known inoperable channel must be placed in the tripped condition. This results in a partial trip condition requiring only one-out-of-three logic for actuation. The 6 hours allowed to place the inoperable channel in the tripped condition is justified in WCAP-10271-P-A (Ref. 7).

(for Unit 2 only)

is used.

BASES

ACTIONS (continued)

In addition to placing the inoperable channel in the tripped condition, THERMAL POWER must be reduced to ≤ 75% RTP within 12 hours. Reducing the power level prevents operation of the core with radial power distributions beyond the design limits. With one of the NIS power range detectors inoperable, 1/4 of the radial power distribution monitoring capability is lost.

As an alternative to the above actions, the inoperable channel can be placed in the tripped condition within 6 hours and the QPTR monitored once every 12 hours as per SR 3.2.4.2, QPTR verification. Calculating QPTR every 12 hours compensates for the lost monitoring capability due to the inoperable NIS power range channel and allows continued unit operation at power levels ≥ 75% RTP. The 6 hour Completion Time and the 12 hour Frequency are consistent with LCO 3.2.4, "QUADRANT POWER TILT RATIO (QPTR)."

As an alternative to the above Actions, the plant must be placed in a MODE where this Function is no longer required OPERABLE. Twelve hours are allowed to place the plant in MODE 3. This is a reasonable time, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging plant systems. If Required Actions cannot be completed within their allowed Completion Times, LCO 3.0.3 must be entered.

The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypass condition for up to 4 hours while performing routine surveillance testing of other channels. The Note also allows placing the inoperable channel in the bypass condition to allow setpoint adjustments of other channels when required to reduce the setpoint in accordance with other Technical Specifications. The 4 hour time limit is justified in Reference 7.

Required Action D.2.2 has been modified by a Note which only requires SR 3.2.4.2 to be performed if the Power Range Neutron Flux input to QPTR becomes inoperable. Failure of a component in the Power Range Neutron Flux Channel which renders the High Flux Trip Function inoperable may not affect the capability to monitor QPTR. As such, determining QPTR using ~~this~~ movable incore detectors once per 12 hours may not be necessary.

the

BASES

ACTIONS (continued)

E.1 and E.2

Condition E applies to the following reactor trip Functions:

5

- Power Range Neutron Flux - Low,
- Overtemperature ΔT,
- Overpower ΔT,
- Power Range Neutron Flux - High Positive Rate,
- ~~Power Range Neutron Flux - High Negative Rate,~~
- Pressurizer Pressure - High,
- SG Water Level - Low Low, and
- ~~SG Water Level - Low coincident with Steam Flow/Feedwater Flow Mismatch.~~

A known inoperable channel must be placed in the tripped condition within 6 hours. Placing the channel in the tripped condition results in a partial trip condition requiring only one-out-of-two logic for actuation of the two-out-of-three trips and one-out-of-three logic for actuation of the two-out-of-four trips. The 6 hours allowed to place the inoperable channel in the tripped condition is justified in Reference 7.

If the inoperable channel cannot be placed in the trip condition within the specified Completion Time, the unit must be placed in a MODE where these Functions are not required OPERABLE. An additional 6 hours is allowed to place the unit in MODE 3. Six hours is a reasonable time, based on operating experience, to place the unit in MODE 3 from full power in an orderly manner and without challenging unit systems.

The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypassed condition for up to 4 hours while performing routine surveillance testing of the other channels. The 4 hour time limit is justified in Reference 7.

BASES

ACTIONS (continued)

F.1 and F.2

Condition F applies to the Intermediate Range Neutron Flux trip when THERMAL POWER is above the P-6 setpoint and below the P-10 setpoint and one channel is inoperable. Above the P-6 setpoint and below the P-10 setpoint, the NIS intermediate range detector performs the monitoring Functions. If THERMAL POWER is greater than the P-6 setpoint but less than the P-10 setpoint, 24 hours is allowed to reduce THERMAL POWER below the P-6 setpoint or increase to THERMAL POWER above the P-10 setpoint. The NIS Intermediate Range Neutron Flux channels must be OPERABLE when the power level is above the capability of the source range, P-6, and below the capability of the power range, P-10. If THERMAL POWER is greater than the P-10 setpoint, the NIS power range detectors perform the monitoring and protection functions and the intermediate range is not required. The Completion Times allow for a slow and controlled power adjustment above P-10 or below P-6 and take into account the redundant capability afforded by the redundant OPERABLE channel, and the low probability of its failure during this period. This action does not require the inoperable channel to be tripped because the Function uses one-out-of-two logic. Tripping one channel would trip the reactor. Thus, the Required Actions specified in this Condition are only applicable when channel failure does not result in reactor trip.

G.1 and G.2 18

Condition G applies to two inoperable Intermediate Range Neutron Flux trip channels ~~in MODE 2~~ when THERMAL POWER is above the P-6 setpoint and below the P-10 setpoint. Required Actions specified in this Condition are only applicable when channel failures do not result in reactor trip. Above the P-6 setpoint and below the P-10 setpoint, the NIS intermediate range detector performs the monitoring Functions. With no intermediate range channels OPERABLE, the Required Actions are to suspend operations involving positive reactivity additions immediately. This will preclude any power level increase since there are no OPERABLE Intermediate Range Neutron Flux channels. The operator must also reduce THERMAL POWER below the P-6 setpoint within two hours. Below P-6, the Source Range Neutron Flux channels will be able to monitor the core power level. The Completion Time of 2 hours will allow a slow and controlled power reduction to less than the P-6 setpoint and takes into account the low probability of occurrence of an event during this period that may require the protection afforded by the NIS Intermediate Range Neutron Flux trip.

BASES

ACTIONS (continued)

G.1

Required Action ~~[ ]~~ is modified by a Note to indicate that normal plant control operations that individually add limited positive reactivity (e.g., temperature or boron fluctuations associated with RCS inventory management, ~~or~~ temperature control) are not precluded by this Action, provided they are accounted for in the calculated SDM.

or plant cooldown to exit the MODE of Applicability and place the plant in a safer condition

15

H.1

Condition H applies to one inoperable Source Range Neutron Flux trip channel when in MODE 2, below the P-6 setpoint, and performing a reactor startup. With the unit in this Condition, below P-6, the NIS source range performs the monitoring and protection functions. With one of the two channels inoperable, operations involving positive reactivity additions shall be suspended immediately.

This will preclude any power escalation. With only one source range channel OPERABLE, core protection is severely reduced and any actions that add positive reactivity to the core must be suspended immediately.

H.1

Required Action ~~[ ]~~ is modified by a note to indicate that normal plant control operations that individually add limited positive reactivity (e.g., temperature or boron fluctuations associated with RCS inventory management, ~~or~~ temperature control) are not precluded by this Action, provided they are accounted for in the calculated SDM.

or plant cooldown to exit the MODE of Applicability and place the plant in a safer condition

I.1

Condition I applies to two inoperable Source Range Neutron Flux trip channels when in MODE 2, below the P-6 setpoint, and in MODE 3, 4, or 5 with the Rod Control System capable of rod withdrawal or one or more rods not fully inserted. With the unit in this Condition, below P-6, the NIS source range performs the monitoring and protection functions. With both source range channels inoperable, the RTBs must be opened immediately. With the RTBs open, the core is in a more stable condition.

J.1, J.2.1, and J.2.2

Condition J applies to one inoperable source range channel in MODE 3, 4, or 5 with the Rod Control System capable of rod withdrawal or one or more rods not fully inserted. With the unit in this Condition, below P-6, the NIS source range performs the monitoring and protection functions. With one of the source range channels inoperable, 48 hours is allowed to restore it to an OPERABLE status. If the channel cannot be returned to

BASES

ACTIONS (continued)

an OPERABLE status, action must be initiated within the same 48 hours to ensure that all rods are fully inserted, and the Rod Control System must be placed in a condition incapable of rod withdrawal within the next hour. ~~The allowance of 48 hours to restore the channel to OPERABLE status, and the additional hour, are justified in Reference 7.~~

16

K.1 and K.2

Condition K applies to the following reactor trip Functions:

- Pressurizer Pressure - Low,
- Pressurizer Water Level - High,
- Reactor Coolant Flow - Low,
- RCP Breaker Position,
- Undervoltage RCPs, and
- Underfrequency RCPs.

in one loop

a low flow signal for that loop.

and RCP Breaker Position

5

With one channel inoperable, the inoperable channel must be placed in the tripped condition within 6 hours. For the Pressurizer Pressure - Low, Pressurizer Water Level - High, Undervoltage RCPs, ~~and~~ Underfrequency RCPs trip Functions, placing the channel in the tripped condition when above the P-7 setpoint results in a partial trip condition requiring only one additional channel to initiate a reactor trip. For the Reactor Coolant Flow - Low ~~and RCP Breaker Position~~ (Two Loops) trip Functions, placing the channel in the tripped condition when above the P-8 setpoint results in a partial trip condition requiring only one additional channel in the same loop to initiate a ~~reactor trip~~. For the latter ~~two~~ trip Functions, two tripped channels in two RCS loops are required to initiate a reactor trip when below the P-8 setpoint and above the P-7 setpoint. The~~se~~ Functions do not have to be OPERABLE below the P-7 setpoint because ~~there are no loss of flow trips below the P-7 setpoint.~~ There is insufficient heat production to generate DNB conditions below the P-7 setpoint. The 6 hours allowed to place the channel in the tripped condition is justified in Reference 7. An additional 6 hours is allowed to reduce THERMAL POWER to below P-7 if the inoperable channel cannot be restored to OPERABLE status or placed in trip within the specified Completion Time.

The pressurizer pressure low Function and RCS flow related

The pressurizer water level Function is not required operable below the P-7 setpoint, because transients that could raise the pressurizer water level will be slow and the operator will have sufficient time to evaluate unit conditions and take corrective actions.

BASES

ACTIONS (continued)

Allowance of this time interval takes into consideration the redundant capability provided by the remaining redundant OPERABLE channel, and the low probability of occurrence of an event during this period that may require the protection afforded by the Functions associated with Condition K.

The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypassed condition for up to 4 hours while performing routine surveillance testing of the other channels. The 4 hour time limit is justified in Reference 7.

5

L.1 and L.2 NA for BVPS

Condition L applies to the RCP Breaker Position (Single Loop) reactor trip Function. There is one breaker position device per RCP breaker. With one channel inoperable, the inoperable channel must be restored to OPERABLE status within 6 hours. If the channel cannot be restored to OPERABLE status within the 6 hours, then THERMAL POWER must be reduced below the P-8 setpoint within the next 4 hours.

This places the unit in a MODE where the LCO is no longer applicable. This Function does not have to be OPERABLE below the P-8 setpoint because other RTS Functions provide core protection below the P-8 setpoint. The 6 hours allowed to restore the channel to OPERABLE status and the 4 additional hours allowed to reduce THERMAL POWER to below the P-8 setpoint are justified in Reference 7.

The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypassed condition for up to 4 hours while performing surveillance testing of the other channels. The 4 hour time limit is justified in Reference 7.

L

M.1 and M.2

Condition ~~M~~ applies to Turbine Trip on Low Fluid Oil Pressure or on Turbine Stop Valve Closure. With one channel inoperable, the inoperable channel must be placed in the trip condition within 6 hours. If placed in the tripped condition, this results in a partial trip condition ~~requiring only one additional channel to initiate a reactor trip~~. If the channel cannot be restored to OPERABLE status or placed in the trip condition, then power must be reduced below the P-9 setpoint within the next 4 hours. The 6 hours allowed to place the inoperable channel in the

5

not true for Stop Valve Closure Function

BASES

ACTIONS (continued)

tripped condition and the 4 hours allowed for reducing power are justified in Reference 7.

The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypassed condition for up to 4 hours while performing routine surveillance testing of the other channels. The 4 hour time limit is justified in Reference 7.

M

M

N.1 and N.2

Condition ~~N~~ applies to the SI Input from ESFAS reactor trip and the RTS Automatic Trip Logic in MODES 1 and 2. These actions address the train orientation of the RTS for these Functions. With one train inoperable, 6 hours are allowed to restore the train to OPERABLE status (Required Action N.1) or the unit must be placed in MODE 3 within the next 6 hours. The Completion Time of 6 hours (Required Action N.1) is reasonable considering that in this Condition, the remaining OPERABLE train is adequate to perform the safety function and given the low probability of an event during this interval. The Completion Time of 6 hours (Required Action N.2) is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging unit systems.

23

The time specified in the Note is an exception to the 6-hour Completion Time that provides a delay period prior to starting the Completion Time.

The Required Actions have been modified by a Note that allows bypassing one train up to [ 4 ] hours for surveillance testing, provided the other train is OPERABLE.

N

O.1 and O.2

Condition ~~O~~ applies to the RTBs in MODES 1 and 2. These actions address the train orientation of the RTS for the RTBs. With one train inoperable, 1 hour is allowed to restore the train to OPERABLE status or the unit must be placed in MODE 3 within the next 6 hours. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging unit systems. The 1 hour and 6 hour Completion Times are equal to the time allowed by LCO 3.0.3 for shutdown actions in the event of a complete loss of RTS Function. Placing the unit in MODE 3 results in ACTION C entry while RTB(s) are inoperable.

train

The Required Actions have been modified by two Notes. Note 1 allows one ~~channel~~ to be bypassed for up to 2 hours for surveillance testing, provided the other ~~channel~~ is OPERABLE. Note 2 allows one RTB to be

BASES

14

The time specified in these Notes is an exception to the 1-hour Completion Time that provides a delay period prior to starting the Completion Time.

ACTIONS (continued)

CTS Action 44

The interlock status may be verified by observation of the associated permissive annunciator/status window(s).

bypassed for up to 2 hours for maintenance if the other RTB train is OPERABLE. ~~The 2 hour time limit is justified in Reference 7.~~

17

on the undervoltage or shunt trip mechanisms

O

P.1 and P.2

Condition P applies to the P-6 and P-10 interlocks. With one or more channels inoperable for one-out-of-two or two-out-of-four coincidence logic, the associated interlock must be verified to be in its required state for the existing unit condition within 1 hour or the unit must be placed in MODE 3 within the next 6 hours. Verifying the interlock status manually accomplishes the interlock's Function. The Completion Time of 1 hour is based on operating experience and the minimum amount of time allowed for manual operator actions. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging unit systems. The 1 hour and 6 hour Completion Times are equal to the time allowed by LCO 3.0.3 for shutdown actions in the event of a complete loss of RTS Function.

5

CTS Action 44

The interlock status may be verified by observation of the associated permissive annunciator/status window(s).

P

Q.1 and Q.2

Condition Q applies to the P-7, P-8, P-9, and P-13 interlocks. With one or more channels inoperable for one-out-of-two or two-out-of-four coincidence logic, the associated interlock must be verified to be in its required state for the existing unit condition within 1 hour or the unit must be placed in MODE 2 within the next 6 hours. These actions are conservative for the case where power level is being raised. Verifying the interlock status manually accomplishes the interlock's Function. The Completion Time of 1 hour is based on operating experience and the minimum amount of time allowed for manual operator actions. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 2 from full power in an orderly manner and without challenging unit systems.

Q

R.1 and R.2

Condition R applies to the RTB Undervoltage and Shunt Trip Mechanisms, or diverse trip features, in MODES 1 and 2. With one of the diverse trip features inoperable, it must be restored to an OPERABLE status within 48 hours or the unit must be placed in a MODE where the requirement does not apply. This is accomplished by placing the unit in MODE 3 within the next 6 hours (54 hours total time). The Completion Time of 6 hours is a reasonable time, based on operating experience, to

BASES

ACTIONS (continued)

reach MODE 3 from full power in an orderly manner and without challenging unit systems. With the unit in MODE 3, ACTION C would apply to any inoperable RTB trip mechanism. The affected RTB shall not be bypassed while one of the diverse features is inoperable except for the time required to perform maintenance to one of the diverse features. The allowable time for performing maintenance of the diverse features is 2 hours for the reasons stated under Condition ~~O.~~ N

TSTF-453

The Completion Time of 48 hours for Required Action ~~R.1~~ Q is reasonable considering that in this Condition there is one remaining diverse feature for the affected RTB, and one OPERABLE RTB capable of performing the safety function and given the low probability of an event occurring during this interval.

INSERT 3
Action Conditions R & S

SURVEILLANCE REQUIREMENTS

The SRs for each RTS Function are identified by the SRs column of Table 3.3.1-1 for that Function.

A Note has been added to the SR Table stating that Table 3.3.1-1 determines which SRs apply to which RTS Functions.

Note that each channel of process protection supplies both trains of the RTS. When testing Channel I, Train A and Train B must be examined. Similarly, Train A and Train B must be examined when testing Channel II, Channel III, and Channel IV (if applicable). The CHANNEL CALIBRATION and COTs are performed in a manner that is consistent with the assumptions used in analytically calculating the required channel accuracies.

- REVIEWER'S NOTE -
Certain Frequencies are based on approval topical reports. In order for a licensee to use these times, the licensee must justify the Frequencies as required by the staff SER for the topical report.

SR 3.3.1.1

Performance of the CHANNEL CHECK once every 12 hours ensures that gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift

BASES

SURVEILLANCE REQUIREMENTS (continued)

in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

The power range channel output shall be adjusted consistent with the calorimetric heat balance calculation results if the calorimetric calculation exceed the power range channel output by more than + 2% RTP.

Agreement criteria are determined by the unit staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

The Frequency is based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

TSTF-371

SR 3.3.1.2

by more than +

heat balance calculation results

power range

Insert 2

SR 3.3.1.2 compares the calorimetric heat balance calculation to the ~~NIS~~ channel output every 24 hours. If the calorimetric exceeds the ~~NIS~~ channel output by ~~>~~ 2% RTP, the ~~NIS~~ is not declared inoperable, but must be adjusted. If the ~~NIS~~ channel output cannot be properly adjusted, the channel is declared inoperable.

power range

A power level of 15% RTP is chosen based on plant stability, i.e., automatic rod control capability and turbine generator synchronized to the grid.

~~Two Notes modify SR 3.3.1.2. The first Note indicates that the NIS channel output shall be adjusted consistent with the calorimetric results if the absolute difference between the NIS channel output and the calorimetric is > 2% RTP.~~ The ~~second~~ Note clarifies that this Surveillance is required only if reactor power is ≥ 15% RTP and that ~~12~~ hours ~~is~~ allowed for performing the first Surveillance after reaching 15% RTP. ~~At lower power levels, calorimetric data are inaccurate.~~

are

24

5

calorimetric

The Frequency of every 24 hours is adequate. It is based on unit operating experience, considering instrument reliability and operating history data for instrument drift. Together these factors demonstrate the ~~change in the absolute difference between NIS and~~ heat balance ~~calculated powers rarely exceeds 2%~~ in any 24 hours period.

that a difference between

calculation

and the power range channel output of more than +2% RTP is not expected

In addition, control room operators periodically monitor redundant indications and alarms to detect deviations in channel outputs.

BASES

The surveillance is assigned to both the Power Range Neutron Flux High and OTΔT RTS Functions to assure all 4 NIS channels are verified and adjusted, if necessary.

5

TSTF-371 URVEILLANCE REQUIREMENTS (continued)

A Note

5

(normalized) based on the incore surveillance data.

~~Note 2~~ clarifies that the Surveillance is required when reactor power is ≥ 50% RTP and that 7 days are allowed to perform the Surveillance and channel adjustment, if necessary, after reaching 50% RTP. A power level of ≥ 50% RTP is consistent with the requirements of SR 3.3.1.9. The performance of SR 3.3.1.9 may be used to satisfy the requirements of SR 3.3.1.3. SR 3.3.1.9 may be performed in lieu of SR 3.3.1.3 since SR 3.3.1.9 calibrates (i.e., requires adjustment of) the excore channels based on incore surveillance data and therefore envelopes the performance of SR 3.3.1.3.

SR 3.3.1.3

SR 3.3.1.3 compares the incore system to the NIS channel output every 31 EFPD. If the absolute difference is ≥ 3%, the NIS channel is still OPERABLE, but must be readjusted.

TSTF-371

If the NIS channel cannot be properly readjusted, the channel is declared inoperable. This Surveillance is performed to verify the f(ΔI) input to the overtemperature ΔT Function.

periodically

~~Two Notes modify SR 3.3.1.3. Note 1 indicates that~~ the excore NIS channel shall be adjusted ~~if the absolute difference between the incore and excore AFD is ≥ 3%.~~ ~~Note 2 clarifies that the Surveillance is required only if reactor power is ≥ [15%] RTP and that 24 hours is allowed for performing the first Surveillance after reaching [15%] RTP.~~

~~The~~ Frequency of every 31 EFPD is adequate. It is based on unit operating experience, considering instrument reliability and operating history data for instrument drift. Also, the slow changes in neutron flux during the fuel cycle can be detected during this interval.

For each operating cycle, the initial channel normalization is performed in accordance with SR 3.3.1.9. Subsequent periodic verification at a

to ensure the NIS channels remain calibrated.

5

SR 3.3.1.4

8

SR 3.3.1.4 is the performance of a TADOT every 31 days on a STAGGERED TEST BASIS. This test shall verify OPERABILITY by actuation of the end devices. A successful test of ~~the~~ required contact(s) of a channel relay may be performed by the verification of the ~~change of state of a single~~ contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications ~~and non-Technical Specifications tests at least once per refueling interval with applicable extensions.~~

any

Surveillance Requirements.

The RTB test shall include separate verification of the undervoltage and shunt trip mechanisms. Independent verification of RTB undervoltage and shunt trip Function is not required for the bypass breakers. No capability is provided for performing such a test at power. The independent test for bypass breakers is included in SR 3.3.1.~~14~~. The bypass breaker test shall include a local shunt trip. A Note has been added to indicate that this test must be performed on the bypass breaker prior to placing it in service.

12

manual

5

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Frequency of every 31 days on a STAGGERED TEST BASIS is adequate. It is based on industry operating experience, considering instrument reliability and operating history data.

SR 3.3.1.5

TSTF-347

, including operation of the P-7 permissive which is a logic function only.

SR 3.3.1.5 is the performance of an ACTUATION LOGIC TEST. The SSPS is tested every 31 days on a STAGGERED TEST BASIS, using the semiautomatic tester. The train being tested is placed in the bypass condition, thus preventing inadvertent actuation. Through the semiautomatic tester, all possible logic combinations, with and without applicable permissives, are tested for each protection function. The Frequency of every 31 days on a STAGGERED TEST BASIS is adequate. It is based on industry operating experience, considering instrument reliability and operating history data.

5

Move to SR 3.3.1.9 position in Bases Text on page 49.

SR 3.3.1.~~6~~ 9

SR 3.3.1.~~6~~ is a calibration of the excore channels to the incore channels. If the measurements do not agree, the excore channels are not declared inoperable but must be calibrated to agree with the incore detector measurements. If the excore channels cannot be adjusted, the channels are declared inoperable. This Surveillance is performed ~~to verify the~~ f(ΔI) input to the overtemperature ΔT Function

(normalized)

at BOL to normalize the excore channel

for each new operating cycle. The surveillance is assigned to both the Power Range Neutron Flux High and OTΔT RTS Functions to assure all 4 NIS channels are initially normalized to the new core.

A Note modifies SR 3.3.1.~~6~~. The Note states that this Surveillance is required only if reactor power is ≥ 50% RTP and that ~~[24] hours is~~ allowed for performing the ~~first~~ surveillance after reaching 50% RTP.

7 days are

~~The Frequency of 92 EFPD is adequate. It is based on industry operating experience, considering instrument reliability and operating history data for instrument drift.~~

The Frequency of once per fuel cycle is adequate to establish the initial cycle-specific calibration of the excore channels. It is based on industry operating experience, considering instrument reliability and the performance of SR 3.3.1.3 every 31 EFPD which verifies the excore channels remain within the required calibration tolerance

6

SR 3.3.1.~~7~~

SR 3.3.1.~~7~~ is the performance of a COT every [92] days.

8

A COT is performed on each required channel to ensure the entire channel will perform the intended Function. A successful test of ~~the~~ any required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable COT of a relay. This is acceptable because all of the other required contacts of the

BASES

Surveillance Requirements

(excluding time constants which are verified during CHANNEL CALIBRATIONS).

SURVEILLANCE REQUIREMENTS (continued)

8 relay are verified by other Technical Specification~~s and non-Technical Specifications tests at least once per refueling interval with applicable extensions.~~

5

Setpoints must be within the Allowable Values specified in Table 3.3.1-1.

The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology. The setpoint shall be left set consistent with the assumptions of the current unit specific setpoint methodology.

after decreasing power below the P-6 interlock setpoint.

21 ~~The "as found" and "as left" values must also be recorded and reviewed for consistency with the assumptions of Reference 7.~~

6 12 hour

5 SR 3.3.1.~~7~~ is modified by a Note that provides a ~~4 hours~~ delay in the requirement to perform this Surveillance for source range instrumentation ~~when entering MODE 3 from MODE 2~~. This Note allows a normal shutdown to proceed without a delay for testing in MODE 2 and ~~for~~ a short time in MODE 3 until the RTBs are open and ~~SR 3.3.1.7 is no longer required to~~ be performed. If the unit is to be in MODE 3 with the RTBs closed for > ~~4~~ hours this Surveillance must be performed prior to ~~4~~ hours after ~~entry into MODE 3~~.

6

Mode 2 below the P-6 setpoint or in

12

decreasing power below the P-6 setpoint.

The Frequency of {92} days is justified in Reference 7.

SR 3.3.1.~~8~~ 7

6

SR 3.3.1.~~8~~ is the performance of a COT as described in SR 3.3.1.~~7~~, except it is modified by a Note that this test shall include verification that the P-6 and P-10 interlocks are in their required state for the existing unit condition. ~~A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable COT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.~~ The Frequency is modified by a Note that allows this surveillance to be satisfied if it has been performed within {92} days of the Frequencies prior to reactor startup and ~~four~~ hours after reducing power below P-10 ~~and P-6~~. The Frequency of "prior to startup" ensures this surveillance is performed prior to critical operations and applies to the ~~source,~~ intermediate and power range low instrument channels. The Frequency of {12} hours after reducing power

9

12

5

BASES

SURVEILLANCE REQUIREMENTS (continued)

below P-10 (applicable to intermediate and power range low channels) ~~and 4 hours after reducing power below P-6 (applicable to source range channels)~~ allows a normal shutdown to be completed and the unit removed from the MODE of Applicability for this surveillance without a delay to perform the testing required by this surveillance. The Frequency of every 92 days thereafter applies if the plant remains in the MODE of Applicability after the initial performances of prior to reactor startup and [12] ~~and four~~ hours after reducing power below P-10 ~~or P-6, respectively~~. The MODE of Applicability for this surveillance is < P-10 for the power range low and intermediate range channels ~~and < P-6 for the source range channels~~. Once the unit is in MODE 3, this surveillance is no longer required. If power is to be maintained < P-10 for more than ~~[~~12] hours ~~or < P-6 for more than 4 hours~~, then the testing required by this surveillance must be performed prior ~~to the expiration of the time limit.~~ ~~[Twelve]~~ 12 hours ~~and four hours are~~ is a reasonable times to complete the required testing or place the unit in a MODE where this surveillance is no longer required. This test ensures that the NIS ~~source,~~ intermediate, and power range low channels are OPERABLE prior to taking the reactor critical and after reducing power into the applicable MODE (< P-10 ~~or < P-6~~) for periods > [12] ~~and 4~~ hours~~, respectively~~.

5

SR 3.3.1.~~9~~ 8

SR 3.3.1.~~9~~ 8 is the performance of a TADOT and is performed every [92] days, as justified in Reference 7. A successful test of ~~the~~ any required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications ~~and non-Technical Specifications tests at least once per refueling interval with applicable extensions.~~ Surveillance Requirements.

8

The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since this SR applies to RCP undervoltage and underfrequency relays, setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION.

Insert Bases for SR 3.3.1.9 (Old SR 3.3.1.6) from page 47.

SR 3.3.1.10

A CHANNEL CALIBRATION is performed every [18~~]~~ months, or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test

BASES

SURVEILLANCE REQUIREMENTS (continued)

verifies that the channel responds to a measured parameter within the necessary range and accuracy.

CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the unit specific setpoint methodology. The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology.

Insert description of RTD calibration from next page.

5

The Frequency of 18 months is based on the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint methodology.

1

SR 3.3.1.10 is modified by a Note stating that this test shall include verification that the time constants are adjusted to the prescribed values where applicable.

In addition, this

~~SR 3.3.1.11~~

~~SR 3.3.1.11 is the performance of a CHANNEL CALIBRATION, as described in SR 3.3.1.10, every [18] months. This~~ SR is modified by a Note stating that neutron detectors are excluded from the CHANNEL CALIBRATION. The CHANNEL CALIBRATION for the power range neutron detectors consists of a normalization of the detectors based on a power calorimetric and flux map performed above 15% RTP. The CHANNEL CALIBRATION for the source range and intermediate range neutron detectors consists of obtaining the detector ~~plateau or preamp discriminator curves, evaluating those curves, and comparing the curves to the manufacturer's data.~~ This Surveillance is not required for the NIS power range detectors for entry into MODE 2 or 1, and is not required for the NIS intermediate range detectors for entry into MODE 2, because the unit must be in at least MODE 2 to perform the test for the intermediate range detectors and MODE 1 for the power range detectors. ~~The [18] month Frequency is~~ based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed on the [18] month Frequency.

2

calibration data and establishing detector operating conditions in accordance with approved plant procedures.

10

11

BASES

SURVEILLANCE REQUIREMENTS (continued)

Move RTD Calibration description to previous page and insert where indicated.

5

SR ~~3.3.1~~.12

SR 3.3.1.12 is the performance of a CHANNEL CALIBRATION, as described in SR 3.3.1.10, ~~every~~ [18] months. This SR is modified by a Note stating ~~that this~~ test shall include ~~verification~~ of the RCS resistance temperature detector (RTD) bypass loop flow ~~rate~~. Whenever a sensing element is replaced, the next required CHANNEL CALIBRATION of the resistance temperature detectors (RTD) sensors is accomplished by an inplace cross calibration that compares the other sensing elements with the recently installed sensing element.

5

This ~~test will~~ verify the rate lag compensation for flow from the ~~core to~~ the RTDs.

The Frequency is justified ~~by the assumption of~~ an 18 month calibration interval in the ~~determination~~ of the magnitude of ~~equipment~~ drift in the ~~setpoint~~ analysis.

SR 3.3.1.~~13~~ 11

any

8

SR 3.3.1.~~13~~ is the performance of a COT of RTS interlocks every [18] months. A successful test of ~~the~~ required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable COT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications ~~and non-Technical Specifications tests at least once per refueling interval with applicable extensions.~~ Surveillance Requirements.

The Frequency is based on the known reliability of the interlocks and the multichannel redundancy available, and has been shown to be acceptable through operating experience.

SR 3.3.1.~~14~~ 12

Surveillance Requirements.

any

8

SR 3.3.1.~~14~~ is the performance of a TADOT of the Manual Reactor Trip, RCP Breaker Position, and the SI Input from ESFAS. A successful test of ~~the~~ required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications ~~and non-Technical Specifications tests at least once per refueling interval with applicable extensions~~. This TADOT is performed every ~~[18]~~ months. The test shall independently verify the OPERABILITY of the undervoltage and shunt trip mechanisms for the

BASES

5

For the SI input from ESFAS, this test verifies the SI logic output to the reactor trip system.

SURVEILLANCE REQUIREMENTS (continued)

Manual Reactor Trip Function for the Reactor Trip Breakers and Reactor Trip Bypass Breakers. The Reactor Trip Bypass Breaker test shall include testing of the automatic undervoltage trip.

As the requirements for the ESFAS instrument channels, including actuation logic and Allowable Values are specified separately in LCO 3.3.2,

The Frequency is based on the known reliability of the Functions and the multichannel redundancy available, and has been shown to be acceptable through operating experience.

The ~~SR~~ is modified by a Note that excludes verification of setpoints from the TADOT. ~~T~~he Functions affected have no setpoints associated with them.

by this SR

SR 3.3.1.~~15~~ 13

SR 3.3.1.~~15~~ is the performance of a TADOT of Turbine Trip Functions. ~~A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.~~ This TADOT is as described in SR 3.3.1.4, except that this test is performed prior to exceeding the ~~[~~P-9~~]~~ interlock whenever the unit has been in MODE 3. This Surveillance is not required if it has been performed within the previous 31 days. Verification of the Trip Setpoint does not have to be performed for this Surveillance. Performance of this test will ensure that the turbine trip Function is OPERABLE prior to exceeding the ~~[~~P-9~~]~~ interlock.

9

SR 3.3.1.~~16~~ 14

the Licensing Requirements Manual (LRM)

SR 3.3.1.~~16~~ verifies that the individual channel/train actuation response times are less than or equal to the maximum values assumed in the accident analysis. Response time testing acceptance criteria are included in ~~Technical Requirements Manual, Section 15 (Ref. 8)~~. Individual component response times are not modeled in the analyses.

5

This surveillance is only required for instrument channels with response times that are assumed in the safety analyses. The LRM identifies instrument channels for which no response time is assumed in the safety analyses by indicating that the response time is not applicable.

The analyses model the overall or total elapsed time, from the point at which the parameter exceeds the trip setpoint value at the sensor to the point at which the equipment reaches the required functional state (i.e., control and shutdown rods fully inserted in the reactor core).

CTS bases

BASES

22

SURVEILLANCE REQUIREMENTS

or by such means as utilizing a step change input signal

For channels that include dynamic transfer Functions (e.g., lag, lead/lag, rate/lag, etc.), the response time test may be performed with the transfer Function set to one, with the resulting measured response time compared to the ~~appropriate FSAR response time~~. Alternately, the response time test can be performed with the time constants set to their nominal value, provided the required response time is analytically calculated assuming the time constants are set at their nominal values. The response time may be measured by a series of overlapping tests such that the entire response time is measured.

response time specified in the LRM.

5

12

- ~~REVIEWER'S~~ NOTE -

~~Applicable portions of the following Bases are applicable for plants adopting WCAP-13632-P-A and/or WCAP-14036-P.~~

The following alternate means for verifying response times (i.e., summation of allocated times) is only applicable to Unit 2.

Response time may be verified by actual response time tests in any series of sequential, overlapping or total channel measurements, or by the summation of allocated sensor, signal processing and actuation logic response times with actual response time tests on the remainder of the channel. Allocations for sensor response times may be obtained from: (1) historical records based on acceptable response time tests (hydraulic, noise, or power interrupt tests), (2) in place, onsite, or offsite (e.g., vendor) test measurements, or (3) utilizing vendor engineering specifications. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," provides the basis and methodology for using allocated sensor response times in the overall verification of the channel response time for specific sensors identified in the WCAP. Response time verification for other sensor types must be demonstrated by test.

[WCAP-14036-P-A, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," provides the basis and methodology for using allocated signal processing and actuation logic response times in the overall verification of the protection system channel response time.] The allocations for sensor, signal conditioning, and actuation logic response times must be verified prior to placing the component in operational service and re-verified following maintenance that may adversely affect response time. In general, electrical repair work does not impact response time provided the parts used for repair are of the same type and value. Specific components identified in the WCAP may be replaced without verification testing. One example where response time could be affected is replacing the sensing assembly of a transmitter.

and WCAP-15413, "Westinghouse 7300A ASIC-Based Replacement Module Licensing Summary Report"

CTS Bases

WCAP-15413 provides bounding response times where 7300 cards have been replaced with ASICs cards.

BASES

5

Each verification shall include at least one logic train such that both logic trains are verified at least once per 36 months.

From CTS 4.3.1.1.3

SURVEILLANCE REQUIREMENTS (continued)

19

As appropriate, each channel's response must be verified every [18] months on a STAGGERED TEST BASIS. ~~Testing of the final actuation devices is included in the testing~~. Response times cannot be determined during unit operation because equipment operation is required to measure response times. Experience has shown that these components usually pass this surveillance when performed at the 18 months Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

14

SR 3.3.1.~~16~~ is modified by a Note stating that neutron detectors are excluded from RTS RESPONSE TIME testing. This Note is necessary because of the difficulty in generating an appropriate detector input signal. Excluding the detectors is acceptable because the principles of detector operation ensure a virtually instantaneous response.

1. Westinghouse Setpoint Methodology for Protection Systems, WCAP-11419, Rev. 5 (Unit 1) and WCAP-11366, Rev. 7 (Unit 2).

2 U

5

REFERENCES

~~1.~~ FSAR, Chapter ~~[7].~~ (Unit 1 and Unit 2).

3

~~2. FSAR, Chapter [6].~~ UFSAR Chapter 14 (Unit 1) and UFSAR Chapter 15 (Unit 2).

~~3. FSAR, Chapter [15].~~

4. IEEE-279-1971.

5. 10 CFR 50.49.

6. ~~RTS/ESFAS setpoint methodology study.~~ Westinghouse Nuclear Safety Advisory Letter NSAL-00-016, Rod Withdrawal from Subcritical Protection in Lower Modes, Dec. 4, 2000

7. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990.

~~8. Technical Requirements Manual, Section 15, "Response Times."~~

~~[9. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," January 1996.]~~

~~[10. WCAP-14036-P, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," December 1995.]~~

# 3.3.1 Bases Inserts

1. The nominal trip setpoints account for calibration tolerances, instrument uncertainties, instrument drift, and severe environment errors for those RTS channels that must function in harsh environments as defined by 10 CFR 50.49 (Ref. 5). The nominal trip setpoints are specified in the Licensing Requirements Manual (LRM). The Allowable Values specified in the Technical Specifications are determined by adding (or subtracting) the calibration accuracy of the trip device to the nominal trip setpoint in the non-conservative direction (i.e., toward or closer to the safety analysis limit) for the application. The Allowable Values remain conservative with respect to the analytical limits. For those channels that provide trip actuation via a bistable in the process racks, the calibration accuracy is defined by the rack calibration accuracy term. For a limited number of channels that provide trip actuation without being processed via the process racks (e.g., undervoltage relay or turbine trip channels) the Allowable Value is defined by device drift or repeatability (Ref. 1). The application of the calibration accuracy term (or device drift as applicable) to each RTS setpoint results in a "calibration tolerance band". Thus, the trip setpoint value is considered a "nominal" value (i.e., expressed as a value with a calibration tolerance) for the purposes of the COT and CHANNEL CALIBRATION. The calibration tolerance band for each RTS setpoint is specified in plant procedures.

24

2. If the calorimetric is performed at part power (< 70% RTP), adjusting the power range channel indication in the increasing power direction will assure a reactor trip below the safety analysis limit. Making no adjustment to the power range channel in the decreasing power direction due to a part power calorimetric assures a reactor trip consistent with the safety analyses. This allowance does not preclude making indicated power adjustments, if desired, when the calorimetric heat balance calculation is less than the power range channel output. To provide close agreement between indicated power and to preserve operating margin, the power range channels are normally adjusted when operating at or near full power during steady-state conditions. However, discretion must be exercised if the power range channel output is adjusted in the decreasing power direction due to a part power calorimetric (< 70% RTP). This action may introduce a non-conservative bias at higher power levels that may result in a Power Range Neutron Flux - High reactor trip above the safety analysis limit. The cause of the potential non-conservative bias is the decreased accuracy of the calorimetric at reduced power conditions. The primary error contributor to the instrument uncertainty for a secondary side power calorimetric measurement is the feedwater flow measurement, which is typically a $\Delta P$ measurement across a feedwater venturi. While the measurement uncertainty remains constant in $\Delta P$ as power decreases, when translated into flow, the uncertainty increases as a square term. Thus a 1% flow error at 100% power can approach a 10% flow error at 30% RTP even though the $\Delta P$ error has not changed.

This bias error is not present when using the leading edge flow meter (LEFM) to determine feedwater flow for performing the secondary side power calorimetric. However, when using the LEFM for performing the secondary side power calorimetric, the requirements of this SR assure a power range channel output and reactor trip function that are conservative with respect to the assumptions of the safety analyses described above.

An evaluation of extended operation at part power conditions would conclude that it is prudent to administratively adjust the setpoint of the Power Range Neutron Flux - High bistables to ≤ 85% RTP when: 1) the power range channel output is adjusted in the decreasing power direction due to a part power calorimetric below 70% RTP; or 2) for a post refueling startup. The evaluation of extended operation at part power conditions would also conclude that the potential need to adjust the indication of the Power Range Neutron Flux in the decreasing power direction is quite small, primarily to address operation in the intermediate range about P-10 (nominally 10% RTP) to allow enabling of the Power Range Neutron Flux - Low setpoint and the Intermediate Range Neutron Flux reactor trips. Before the Power Range Neutron Flux - High bistables are reset to a nominal value specified in the Licensing Requirements Manual, the power range channel adjustment must be confirmed based on a calorimetric performed at ≥ 70% RTP.

# 3.3.1 Bases Inserts

3. Bases for New Action Conditions added by TSTF-453

R.1

Condition R applies to one inoperable Power Range Neutron Flux- Low channel in MODE 2 with $k_{eff}$ < 1.0, and all RCS cold leg temperatures ≥ 500 °F, and RCS boron concentration ≤ the ARO critical boron concentration when the Rod Control System is capable of rod withdrawal, or one or more rods not fully inserted, and in MODE 3 with all RCS cold let temperatures ≥ 500 °F, and the RCS boron concentration is ≤ the ARO critical boron concentration when the Rod Control System is capable of rod withdrawal, or one or more rods are not fully inserted. The inoperable channel must be placed in the tripped condition within 6 hours. Placing the channel in the tripped condition results in a partial trip condition requiring only a one-out-of-three logic for actuation of this reactor trip function. The 6 hours to place the inoperable channel in the tripped condition is justified in Reference 7.

The Required Action is modified by a Note. The Note allows placing an inoperable channel in the bypassed condition for up to 4 hours while performing routine surveillance testing of the other channels. The 4 hour time limit is justified in Reference 7.

S.1.1, S.1.2, and S.2

If the inoperable channel can not be placed in the tripped condition within the specified Completion Time, or if two or more channels are inoperable, action must be initiated immediately to fully insert all rods, and to make the rods incapable of rod withdrawal. This action will preclude an uncontrolled RCCA bank withdrawal accident from occurring.

Required Action S.2 provides an alternative to Required Actions S.1.1 and S.1.2. If the inoperable channel can not be placed in the tripped condition within the specified Completion Time, or if two or more channels are inoperable, action must be initiated to borate the RCS to > the ARO critical boron concentration. Borating the RCS to > the ARO critical boron concentration would provide sufficient SHUTDOWN MARGIN, if an uncontrolled RCCA bank withdrawal accident were to occur.

4. In MODE 3 with the RCS temperature ≥ [500] °F, the Power Range Neutron Flux - Low trip Function provides protection for an uncontrolled RCCA bank withdrawal or control rod ejection event from low power or subcritical conditions.

   In MODE 3 with any RCS cold leg temperature < [500] °F, and in MODES 4 and 5, LCO 3.1.10 requires that the RCS be borated to greater than the ARO critical boron concentration to ensure that sufficient SHUTDOWN MARGIN is available to mitigate an uncontrolled RCCA bank withdrawal event or control rod ejection event. Therefore, the safety analyses do not take explicit credit for the Source Range Neutron Flux trip Function as a primary trip to mitigate an uncontrolled RCCA bank withdrawal or control rod ejection event. LCO 3.1.10 ensures that sufficient SHUTDOWN MARGIN is available if an uncontrolled RCCA bank withdrawal or control rod ejection event were to occur.

   The reliance on the boron limitation of LCO 3.1.10 when the RCS temperature is below 500°F in MODES 3, 4 and 5 and the Power range Neutron Flux Low Trip Function when the RCS temperature is ≥ 500°F in MODE 3, to address an uncontrolled RCCA bank withdrawal accident, is consistent with the guidance of Westinghouse Nuclear Safety Advisory Letter 00-016 (Ref. 6).

# 3.3A1

# REACTOR TRIP SYSTEM INSTRUMENTATION BASES

# JUSTIFICATIONS FOR DEVIATION

## *ITS 3.3.1 Reactor Trip System Instrumentation Bases*

JUSTIFICATION FOR DEVIATION (JFD)

1. This JFD addresses all changes made to the Bases that are editorial in nature and that do not affect the technical content of the Bases. The changes addressed by this JFD are made to correct spelling, grammar, and capitalization errors as well as incorporate wording preferences. In some cases, these changes are necessary to make the descriptions of reference content correct (e.g., the content of the BVPS UFSARs may not be exactly the same as described in the ISTS Bases) or to make the actual location of information discussed correct for BVPS (e.g., the location of trip setpoints outside of the TS or the location of the list of the number of required channels for each RTS Function). The reasons for the changes addressed by this JFD are considered self-explanatory and a separate more detailed explanation unnecessary. These changes do not significantly impact the technical discussions contained in the Bases and in general improve the clarity or correctness of the affected text or make the text more specific to BVPS. As such, the proposed changes are acceptable.
2. Changes are made to the ISTS Bases to reflect the BVPS specific setpoint methodology. The BVPS trip setpoints associated with the RTS Functions are nominal values with a calibration tolerance. The nominal trip setpoints are specified in the Licensing Requirements Manual not the TS. The BVPS Allowable values are recognized as the Limiting Safety System Settings (LSSS) required in the TS by 10CFR50.36. The BVPS Allowable Value is determined by the nominal trip setpoint calibration tolerance. The BVPS RTS Function operability is determined by verifying the Function is within the specified Allowable Value (setpoint calibration tolerance). The changes associated with this JFD are required to maintain consistency with the current BVPS setpoint methodology and the current BVPS licensing basis as specified in the CTS.
3. Consistent with the BVPS safety analyses performed by Westinghouse, maintaining the minimum DNBR above the safety limit does not prevent DNB from occurring. By definition, maintaining the DNBR above the safety limit demonstrates that there is a 95% probability at a 95% confidence level that the lead rod will not experience DNB. As such, the generic ISTS bases text is revised to delete the reference to preventing DNB. In addition, the more conservative BVPS specific analytical acceptance criteria for RCS pressure (2748.5 psia) is referenced in the Bases instead of the Safety Limit (SL) value used in the standard Bases.
4. The ISTS discussion of offsite dose limits is revised to include the limits of 10 CFR 50.67. The BVPS design basis accident analysis utilize the Alternate Source Term and offsite dose limits associated with 10 CFR 50.67 instead of 10 CFR 100 for the dose calculations. This change makes the ISTS Bases more consistent with the current BVPS licensing Basis.
5. The standard bases text is deleted or revised to make the generic bases discussion more

accurate or complete for BVPS. The proposed revisions include changes resulting from revisions to the corresponding TS requirements that are justified in the associated JFDs for the TS. The proposed changes also include additional or revised references, additional or revised design or safety analysis descriptions that make the standard bases discussion more specific to the corresponding BVPS documentation and design or safety analyses. In some cases, additional information is added that was moved from the CTS or that is consistent with the existing CTS Bases. The proposed changes enhance the ISTS Bases discussion and help to make the generic bases text more specific to BVPS.

6. The ISTS bases discussion regarding the SG Low-Low Reactor trip Function is revised to remove unnecessary details that do not concern the RTS Function being discussed. The discussion of the feedwater systems used to maintain the SG level and remove decay heat does not add anything significant to the discussion of the applicable Modes for the SG Level reactor trip. The SG level reactor trip is required operable when the reactor is operating (Modes 1 and 2) to reduce the heat generated by the core when a sufficient heat sink may not be available. The SG level trip is not required operable in Modes 3, 4, 5, and 6 because the reactor is shutdown and a reactor trip will no longer affect the heat generated by the core. As the generic ISTS discussion regarding the method of feeding the SGs does not add anything significant to the bases discussion, is not typically true for BVPS, and is potentially confusing, it has been deleted.

7. References to the specific RTS Interlock setpoint values have been revised to reference the setpoint as specified in the LRM. The proposed change eliminates numerous references to setpoint values throughout the Bases. This is consistent with the CTS Bases, and helps to reduce the potential for error when revising setpoint values. If the setpoint values are only specified in one location, the potential for incorrect references to those setpoints is greatly reduced. The proposed change maintains the current BVPS practice of not repeating setpoint values in the TS Bases.

8. The standard Bases text describing the acceptable test of required relay contacts in the bases for a Channel Operational Test (COT) and TADOT is revised to refer to "any" required contacts and to delete references to non-TS testing and a specific surveillance interval. By replacing "the" with "any", the proposed change removes the implication that the applicable instrument channel always has required relay contact(s). If the instrument channel for which the bases description applies has any required relay contacts, the discussion will still apply. This change will reduce the potential for confusion if a channel does not have relay contacts associated with it. In addition, the references to non-TS testing and a specific surveillance interval are removed. References to non-TS testing has no place in the TS. If such testing was required for the operability of the affected instrument channels it would be in the TS and if it is not associated with the operability of the required instrument channel it does not add any value to the bases discussion and may cause confusion regarding the operability requirements of the required instrumentation. The general reference that all contacts will be tested at least once per refueling is deleted because the specific surveillance interval for any TS testing is provided in the associated surveillance and does not need to be repeated in every Channel Operational Test bases description. In addition, specific surveillance intervals for various TS required instrumentation may change due to TS changes resulting from engineering evaluations, PRA, or other reasons. These changes could result in

surveillance intervals that exceed a refueling cycle. Therefore, it is not appropriate or necessary to make a general statement that all required contacts will be tested at least once per refueling. The applicable TS will continue to define the surveillance interval associated with any required instrumentation.

9. The ISTS surveillance is revised to eliminate information that has already been described in the previous bases description of this surveillance. The first ISTS bases description of the surveillance requirements for a channel operation test, or channel calibration describes the test in detail (including the discussion regarding the testing of relays being deleted). Where a subsequent bases discussion for the same surveillance test refers back to the first bases description of the requirement for details, repetition of those details are not necessary. The affected subsequent surveillance discussion starts with "...is the performance of a [COT] as described in [SR 3.3.1.7], except." Brackets are included in the previous quote to illustrate where the minor differences in each bases discussion may occur. Subsequent descriptions of the same surveillance test only contain details describing differences or exceptions from the first description of the surveillance test (e.g., different frequencies or notes). The ISTS does this to eliminate the repetition of test details that do not change. Therefore, it is not necessary to repeat the descriptive material being deleted from the affected bases discussion.

10. The generic ISTS bases description of how neutron detectors are calibrated is revised to conform more closely to current BVPS practice.

11. The ISTS Bases Frequency discussion for SR 3.3.1.11 is deleted. Proposed changes to the ISTS surveillances combine ISTS SR 3.3.1.10 and SR 3.3.1.11. As a result, the bases text is revised to reflect the combination of these SRs. The explanation of the 18-month channel calibration Frequency contained in ISTS SR 3.3.1.10 is based on the assumptions of the setpoint methodology and is more correct for the BVPS RTS Functions with setpoints that require a channel calibration. Therefore, the explanation of the 18-month Frequency in SR 3.3.1.10 is retained in the final BVPS single channel calibration surveillance requirement Bases.

12. The ISTS Bases reviewers note is replaced with a BVPS specific Note that identifies the discussion of the allowances provided by WCAP-13632-P-A and WCAP-14036-P are only applicable to Unit 2. The allowances provided by these WCAPs have not yet been approved by the NRC for BVPS Unit 1.

13. The ISTS Bases discussion regarding the reactor trip breaker (RTB) Function is revised to better reflect the BVPS design and current practice. The proposed change addresses the use of the bypass breakers and the affect on the RTS. The proposed change includes a more BVPS specific description of the operability requirements for an RTB train and the fact that when the RTB bypass breakers are in use the RTB is incapable of performing its safety function. In addition, the proposed change includes a description of why the bypass breakers are not an equivalent substitute for the associated RTB (i.e., the RTS is reduced to a single actuation logic train when a bypass breaker is in use). The proposed Bases discussion also better addresses the reason to enter the Action for an inoperable RTB when the RTB is bypassed.

14. The ISTS Action Condition for the RTB contains Notes that allow the RTB to be bypassed for surveillance testing and maintenance. The Notes provide for bypass times that exceed the 1 hour Completion Time of the Action Condition. The ISTS Bases describing the Notes in the RTB Action Condition is revised by the addition of a clarification describing the application of the Notes. The added text is consistent with the use of the Notes in the ISTS Action Condition and with the application of similar Notes in the CTS. The explanation is considered necessary due to the format and presentation changes of the ISTS and the more defined application of Completion Times (i.e., starting upon Condition entry). As such, the added clarification is necessary to prevent potential confusion about the requirement to start the 1-hour Completion Time (upon Condition entry) conflicting with the 2-hours provided by the Notes.

15. The Bases for Action Conditions G and H are revised to incorporate an additional clarification. The Required Actions in these Conditions specify that positive reactivity addition must be suspended. The Actions are modified by a Note that allows "limited" positive reactivity additions to be made while in this Action. The Bases explains that the Action is intended to preclude power escalation and that positive reactivity additions are not precluded provided they are accounted for in the shutdown margin calculation. The proposed change adds the clarification that plant cooldown to exit the mode of applicability and place the plant in a safer condition is also not precluded by this Action. The proposed change is consistent with the stated intent of the Action (i.e., to preclude power escalation) and is also consistent with Required Action G.2 in the same Condition that specifies a power decrease (cooldown) below P-6. The proposed change makes it clear that the Action to suspend positive reactivity addition does not preclude placing the plant in a safer (shutdown) condition in a controlled manner as long as the shutdown margin requirements are maintained.

16. The ISTS Bases for Action Condition J justifies the 48 hour Completion Time by referencing WCAP-10271 (Reference 7). This is incorrect. The reference to WCAP 10271 is deleted. The time allowed by this Action Condition was approved by the NRC in previous revisions of the Westinghouse Standard TS (NUREG-0452) prior to WCAP-10271. The 48 hours was not evaluated in WCAP-10271.

17. The ISTS Bases for ITS Action Condition N justifies the 2 hour time provided by the Notes by referencing WCAP-10271 (Reference 7). This is incorrect. The reference to WCAP 10271 is deleted. The time allowed by the Notes was approved by the NRC in previous revisions of the Westinghouse Standard TS (NUREG-0452) prior to WCAP-10271. The 2-hours provided by the Notes was not evaluated in WCAP-10271.

18. The description of Action Condition G is revised by deleting reference to "in Mode 2". The reference as used in the description is misleading as the Condition is applicable in both Modes 1 and 2. The remainder of the Bases description for this Condition is adequate. The Bases states the Condition is applicable between the setpoints of P-6 and P-10. This explanation is an accurate description of the power levels that is consistent with the requirements of the associated TS. The description of between the setpoints of P-6 and P-10 is also adequate to define the scope of the Action Condition in the bases. The elimination of "in Mode 2" does not affect the scope of the Action Condition as specified in

the TS.

19. The references to "actuation devices" in the ISTS Bases discussion regarding the testing of the RTS are deleted. The RTS Actuation Logic Testing and Response Time Testing do not include actuation devices (Master and Slave Relays) like the similar testing requirements for ESFAS. The RTS Response Time definition does not include the term "actuation devices" and adequately defines the required testing without further explanation in the bases for this testing. Similarly, the Actuation logic Test definition contains an adequate explanation of the required testing without the additional bases information using a potentially confusing term (i.e., "actuation devices") that is associated with the ESFAS Master and Slave Relay testing requirements.

20. The relationship between the nominal trip setpoint and Allowable Value is discussed in several places in the generic RTS Bases. The BVPS setpoint methodology that determines the Allowable value and nominal trip setpoint is not consistent with the various generic bases descriptions and these descriptions have been deleted. Instead of discussing this relationship in several places in the bases text, BVPS prefers to describe the nominal trip setpoint and determination of the Allowable Value in detail in one place, the Allowable Values and RTS Setpoint section of the bases. In this section, which is the appropriate place for this description, text from the setpoint methodology (Reference 1) is used to describe this relationship in Insert 1 to page B 3.3.1 - 6. As the Allowable Value is clearly identified in the remaining bases text as the LSSS, as it is in the CTS bases, the elimination of the repetitive descriptions of the Allowable Value and trip setpoints from the generic bases does not result in a technical change to the bases and serves to reduce the potential for error if this text should ever need revision.

21. The bases discussion regarding the recording of as found and as left values in order to meet the requirements of Reference 7 (WCAP-10271) is deleted. BVPS implemented the provisions of this WCAP approximately 10 years ago and addressed the requirements of the WCAP at that time. The applicable RTS setpoint methodology has been revised since implementation of WCAP-10271 and accounts for changes resulting from WCAP-10271. The current setpoint methodology of record (WCAP-11419, Rev. 3 (Unit 1) and WCAP-11366, Rev. 5 (Unit 2)) contains the applicable assumptions regarding instrument drift and other allowances that affect the nominal trip setpoints and Allowable Values for each RTS Function. The ISTS bases paragraph preceding the deleted text, requires that the differences between the as found and as left setpoint values be consistent with the assumptions of the current unit specific setpoint methodology. The text of this preceding paragraph is retained in the BVPS ITS bases. The verification that the assumptions of the setpoint methodology are met provides the required assurance that the RTS setpoints are maintained operable and effectively encompasses the requirements of the deleted paragraph.

22. The response time surveillance bases is revised to reflect current BVPS practice with regard to testing instrument channels with time constants. The use of a step change input signal to verify the response time of a channel eliminates the need to set the time constants to one and results in the same response time whether the time constants are set to nominal values or one. This method is used due to the difficulty in resetting certain time constants back to

their nominal values following testing.

23. The ISTS Action Condition for the RTS automatic trip logic contains a Note that allows the train to be bypassed for 4 hours for surveillance testing provided the other train is operable. The ISTS Bases describing the Note is revised by the addition of a clarification describing the application of the Note. The added text is consistent with the use of the Notes in the ISTS Action Condition and with the application of similar Notes in the CTS. If the Completion Time must be started upon condition entry for the testing allowed by the Note, there would be no need for the Note. The Allowed Completion Time of 6-hours exceeds the time allowed by the Note (4 hours) and would be sufficient to complete testing without the provisions of the Note. Therefore, the Note exists to provide additional time (i.e., delay the start of the Completion Time) for the specific purpose of testing a train. The explanation is considered necessary due to the format and presentation changes of the ISTS and the more defined application of Completion Times (i.e., starting upon Condition entry). As such, the added clarification is necessary to prevent potential confusion about the requirement to start the 6-hour Completion Time (upon Condition entry) conflicting with the time provided by the Note.

24. The TSTF-371 bases insert describing the potential bias error when using the feedwater flow venturi to perform the calorimetric heat balance calculation is revised by the addition of a discussion regarding the use of the Leading Edge Flow Meter (LEFM). BVPS has both a venturi flow meter and the LEFM for determining feedwater flow. Only the venturi flow meter has the bias error described in the TSTF-371 bases insert. The instrument uncertainty introduced by the LEFM does not vary with power like the venturi. Therefore, when using the LEFM, the provision of SR 3.3.1.2 that only requires adjustment of the power range when the calorimetric results exceed the power range channel output is an unnecessary precaution. However, when using the LEFM to perform the calorimetric heat balance calculation and power range adjustment, in accordance with SR 3.3.1.2, the results will continue to be conservative with respect to the safety analyses assumptions described in the TSTF bases insert. As such, SR 3.3.1.2 as revised by TSTF-371 will assure the safe operation of the plant regardless of which feedwater flow measuring device is used. Therefore, SR 3.3.1.2 as revised by TSTF-371 provides the flexibility to use either feedwater flow measuring device to perform the calorimetric.

25. A clarification to the standard RTS bases text is added consistent with the corresponding standard text used in the ESFAS (ITS 3.3.2) bases. The proposed clarification is also consistent with how the CTS Actions work today. The proposed text clarifies that when a Function is specified on a per loop, per SG, etc., basis (i.e., 3 per loop) that the Action Condition may be entered separately for each loop or SG. In such Functions, each loop or SG comprises a separate "sub-function" of 3 channels with an individual 2 out of 3 logic. Therefore, the Action for one inoperable channel can be safely applied to each of the "sub-functions" separately while maintaining the overall safety function intact. When the Action is applied and one channel is placed in trip, the "sub-function" associated with the affected loop or SG would remain operable with a 1 out of 2 trip logic. The omission of this text from the RTS bases (while being included in the ESFAS bases) is an error. As previously stated, the corresponding BVPS CTS requirements (and the previous standard tech specs (0452)) would allow this flexibility.

INTENTIONALLY LEFT BLANK

ENCLOSURE 3

*CHANGES TO THE CTS*

CURRENT TECHNICAL SPECIFICATION (CTS) MARKUP
&
DISCUSSION OF CHANGES (DOCs)

Introduction

This enclosure contains the markup of the current BVPS Unit 2 Technical Specifications (TS), and where necessary to show a change to a BVPS Unit 1 TS that is not addressed by the associated Unit 2 markup and DOCs, a BVPS Unit 1 TS page is included. If a Unit 1 page is included it will be marked to show the change to the Unit 1 specific difference, and will not typically contain markups that repeat the applicable changes already addressed in the corresponding Unit 2 markup. Therefore, unless otherwise stated, each DOC applies to both Units 1 and 2 even though the change may only be marked on the Unit 2 TS.

The CTS is marked-up to show the changes necessary to convert to the Improved Standard Technical Specifications (ISTS) in NUREG-1431, Revision 2. The marked-up CTS result in the BVPS specific Improved Technical Specifications (ITS) contained in Enclosure 1.

In order to facilitate the review of the changes to the CTS, the marked-up CTS are presented in their original numerical order, not ISTS numerical order. The new ITS number is marked at the top of the first page of each CTS and the disposition of each CTS and ISTS is summarized in the Table included at the beginning of Enclosure 1 for each TS Section.

The marked-up TS are followed by the applicable DOCs. Each technical change and more complex administrative change marked on the TS has a unique alpha-numeric designator that corresponds to a specific DOC. Due to the large number of format, editorial and presentation differences between the CTS and the new standard TS, not all of these changes are identified in the marked-up CTS pages. The single generic A.1 administrative change DOC designated on the first page of each marked-up CTS addresses all the marked and unmarked editorial, format, and presentation changes necessary to convert that entire CTS to the corresponding new standard TS. Only the more complex (less obvious) administrative type changes made to the CTS are identified with individual administrative DOCs (i.e., A.2, A.3, etc.).

The DOCs are grouped by the category of the change (i.e., less restrictive, more restrictive, administrative, etc). Each category of change is also associated with a No Significant Hazards Consideration (NSHC) for that change in Enclosure 4.

Certain categories of change also have a sub-category or change type associated with the DOC. The sub-category or change type is used to further group the CTS changes in more specific sub-categories that utilize a common NSHC or DOC.

Each CTS change marked as "Less Restrictive", with no subcategory identified in the associated DOC to reference a generic NSHC, will have a "Specific" NSHC included in Enclosure 4. A description of the categories and types of changes follows.

ENCLOSURE 3 (continued)

Categories and Types of Changes to the CTS

I. The major categories utilized to group changes to the CTS are as follows:

A - Administrative

L - Less Restrictive

M - More Restrictive

LA - Removed Detail (Sections of Tech Spec text removed from CTS)

R - Relocated (Entire Tech Spec requirement removed from CTS)

II. The subcategories of Less Restrictive "L" changes are as follows: (1)

1. Relaxation of LCO Requirements
2. Relaxation of Applicability
3. Relaxation of Completion Time
4. Relaxation of Required Action
5. Deletion of Surveillance Requirement
6. Relaxation of Surveillance Requirement Acceptance Criteria
7. Relaxation of Surveillance Frequency
8. Deletion of Reporting Requirement

III. The types of Removed Detail "LA" changes are as follows: (2)

1. Removing Details of System Design and System Description, Including Design Limits
2. Removing Descriptions of System Operation
3. Removing Procedural Details for Meeting Tech Spec Requirements and Related Reporting Requirements
4. Removing Administrative Requirements Redundant to Regulations
5. Removing Performance Requirements for Indication-Only Instruments and Alarms

(1) Each subcategory of Less Restrictive change is associated with a corresponding NSHC in Enclosure 4.

(2) The types of Removed Detail changes all share a common "LA" NSHC in Enclosure 4.

DRAFT PAGE FROM UNIT 2 LAR # 184

## UNIT 2 PAGES

~~3/4.3~~ INSTRUMENTATION

~~3/4.3.1~~ REACTOR TRIP SYSTEM INSTRUMENTATION

ITS 3.3.1

A1

A2

LIMITING CONDITION FOR OPERATION

~~3.3.1.1 As a minimum,~~ the reactor trip system instrumentation for each Function in ~~channels and interlocks of~~ Table ~~3.3-1~~ 3.3.1-1 shall be OPERABLE.

APPLICABILITY: ~~As shown in~~ According to Table ~~3.3-1~~ 3.3.1-1.

ACTION: As shown in Table ~~3.3-1~~ 3.3.1-1. ~~(2)~~

ITS Cond. A

A3

Replaced by individual SRs assigned to each Function on ITS Table 3.3.1-1.

SURVEILLANCE REQUIREMENTS

~~4.3.1.1.1 Each reactor trip system instrumentation channel and interlock and automatic trip logic shall be demonstrated OPERABLE by the performance of the Reactor Trip System Instrumentation Surveillance Requirements(1) during the MODES and at the frequencies shown in Table 4.3-1.~~

~~4.3.1.1.2 The logic for the interlocks shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of channels affected by interlock operation. The total interlock function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by interlock operation.~~

4.3.1.1.3 ~~The REACTOR TRIP~~ SYSTEM RESPONSE TIME of each reactor trip function ~~shall be~~ verified ~~to be within its~~ limit at least once per 18 ~~months~~. Neutron detectors are exempt from response time testing. Each verification shall include at least one logic train such that both logic trains are verified at least once per 36 months and one channel per function such that all channels are verified at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip function as shown in the "~~Total No. of~~ Required Channels" column of Table ~~3.3-1~~ 3.3.1-1.

Required

L1 or actual

3.3.1-1

A4 STAGGERED TEST BASIS

~~(1)~~ For the automatic trip logic, the surveillance requirements shall be the application of various simulated or actual input combinations in conjunction with each possible interlock logic state and verification of the required logic output including, as a minimum, a continuity check of output devices.

~~(2)~~ Separate ACTION statement entry is allowed for each Function.

ITS Section 1.0, Definitions A5

ITS 3.3.1 Actions Note



SR BASES LA1

3.3.1-1

DRAFT PAGE FROM UNIT 2 LAR # 173 (UNIT 1 LAR # 302)

A6 FUNCTION · A7 REQUIRED · A8 UNIT 2 · A6 OR OTHER SPECIFIED CONDITIONS · CONDITION · L8 · M21 · LA2 · BASES · Rate

TABLE ~~3.3-1~~

REACTOR TRIP SYSTEM INSTRUMENTATION

| ~~FUNCTIONAL UNIT~~ | ~~TOTAL NO.~~ ~~OF CHANNELS~~ | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | ALLOWABLE VALUE | APPLICABLE MODES | ~~ACTION~~ |
|---|---|---|---|---|---|---|
| 1. Manual Reactor Trip | 2 | 1 | 2 | N.A. | 1, 2, 3(3), 4(3) and 5(3) | ~~12~~ B, C |
| 2. Power Range, Neutron Flux [2(d), 3(e)] | | | | | | |
| a. High Setpoint | 4 | 2 | 3 | ≤ 109.5% of RTP* | 1, 2 | 2 D |
| b. Low Setpoint | 4 | 2 | 3 | ≤ 25.5% OF RTP* | 1(1), 2 | 2 E |
| 3. Power Range, Neutron Flux Rate High Positive Rate | 4 | 2 | 3 | ≤ 5.5% of RTP* with a time constant ≥ 2 seconds | 1, 2 (R, S) | 2 |
| ~~4. DELETED~~ | | | | | | |
| 4 ~~5.~~ Intermediate Range, Neutron Flux | 2 | 1 | 2 | ≤ 27.9% of RTP* | 1(1), 2, ~~3(3), 4(3) and 5(3)~~ (f) | 3 F & G |
| 5 ~~6.~~ Source Range~~(8)~~, Neutron Flux | | | | | | |
| ~~a. With Rod Withdrawal Capability~~ | 2 | 1 | 2 | ≤ 1.3 x $10^5$ cps | 2(2) (g), 3(3), 4(3) and 5(3) (a) | 4 H & I, I & J |
| b. With All Rods Fully Inserted and Without Rod Withdrawal Capability | 2 | 0 | 1 | N.A. | 3(9), 4(9), and 5(9) | 5 |

A6 · A7 · A8 · L4 · L11 · A18 · A19 · A11 · A9 · 3.3.8

~~* RATED THERMAL POWER~~ A10

L4 (f) Above the P-6 (Intermediate Range Neutron Flux) interlocks.

(8) Alternate detectors may only be used for monitoring purposes Without Rod Withdrawal Capability until detector functions are modified to permit equivalent alarm and trip functions.

DRAFT PAGE FROM UNIT 2 LAR #197

A6 FUNCTION | A7 REQUIRED | 3.3.1-1 | A8 UNIT 2 | A6 OR OTHER SPECIFIED CONDITIONS | CONDITION

~~TABLE 3.3-1~~ (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

| ~~FUNCTIONAL UNIT~~ | ~~TOTAL NO.~~ OF CHANNELS | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | ALLOWABLE VALUE | APPLICABLE MODES | ~~ACTION~~ |
|---|---|---|---|---|---|---|
| 6 ~~7~~. Overtemperature ΔT | 3 | 2 | 2 | See Table Notation ~~(A)~~ 3 | 1, 2 | ~~7~~ E |
| 7 ~~8~~. Overpower ΔT | 3 | 2 | 2 | See Table Notation ~~(B)~~ 4 | 1, 2 (h) | ~~7~~ E |
| a ~~9~~. ~~Pressurizer Pressure-Low~~ 8. Pressurizer Pressure (Above P-7) Applicability | 3 | 2 | 2 | ≥ 1941 psig** | 1, ~~2~~ | ~~7~~ K |
| b ~~10~~. ~~Pressurizer Pressure~~-High | 3 | 2 | 2 | ≤ 2379 psig | (h) 1, 2 | ~~7~~ K |
| 9 ~~11~~. Pressurizer Water Level-High (Above P-7) Applicability | 3 | 2 | 2 | ≤ 92.5% of instrument span BASES | 1, ~~2~~ | ~~7~~ |
| ~~12. Loss of Flow - Single Loop (Above P-8)~~ LA3 Applicability Bases | ~~3/loop~~ | 2/loop in any operating loop | 2/loop in each operating loop | ~~≥ 89.6% of indicated loop flow~~ | ~~1~~ (h) | ~~7~~ A13 |
| 10. Reactor Coolant Flow Low ~~13. Loss of Flow~~ - Two Loop (Above P-7 and below P-8) Bases | 3/loop | 2/loop in two operating loops | 2/loop each operating loop | ≥ 89.6% of indicated loop flow BASES LA4 | 1 | ~~7~~ K |
| 14. Steam Generator Water Level-Low-Low | 3/loop | 2/loop | 2/loop | ≥ 20% of narrow range instrument span-each steam generator | 1, 2 | ~~7~~ E |

LA2 BASES | L2 | LA4 BASES | A13 | A21 | L2

(h) Above the P-7 (Low Power Reactor Trips Block) Interlock.

** Time constants utilized in the lead-lag controller for Pressurizer Pressure-Low are ≥ 2 seconds for lead and ≤ 1 second for lag. Channel calibration shall ensure that these time constants are adjusted to those values.

Channel Calibration SR Note A12

3.3.1-1

~~TABLE 3.3-1~~ (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

| FUNCTION ~~FUNCTIONAL UNIT~~ | REQUIRED ~~TOTAL NO. OF CHANNELS~~ | CHANNELS TO TRIP | ~~MINIMUM CHANNELS OPERABLE~~ | UNIT 2 ALLOWABLE VALUE | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | CONDITION ~~ACTION~~ |
|---|---|---|---|---|---|---|
| 12 ~~15. DELETED.~~ | | | | | | |
| 13 ~~16.~~ Undervoltage-Reactor Coolant Pumps (Above P-7) Applicability | 3-1/bus | 2 | 2 | ≥ ~~71.2% of rated bus voltage-each bus~~ 2962 V | 1 (h) | ~~7~~ K |
| 15 ~~17.~~ Underfrequency-Reactor Coolant Pumps (Above P-7) | 3-1/bus | 2 | 2 | ≥ 57.45 Hz ~~--each bus~~ | 1 (h) | ~~7~~ K |
| 16 ~~18.~~ Turbine Trip (Above P-9) Applicability | | | | | | |
| Unit 2 a. Emergency Trip Header Low Pressure | 3 | 2 | 2 | ≥ 958 psig | 1 (i) | ~~7~~ L |
| b. Turbine Stop Valve Closure | 4 | 4 | 4 | ≥ 1% open | 1 (i) | ~~8~~ L |
| 11 ~~19.~~ Safety Injection Input from ESF | 2 | 1 | 2 | N.A. | 1, 2 | ~~1~~ M |
| 18 ~~20.~~ Reactor Coolant Pump Breaker Position Trip (Above P-7) Applicability | 1/breaker | 2 | 1/breaker per operating loop | N.A. | 1 (h) | ~~11~~ K |
| ~~21.~~ Reactor Trip Breakers (g) | 2 | 1 | 2 | N.A. | 1, 2 | ~~40~~ N |
| | 2 | 1 | 2 | N.A. | 3 ~~(3)~~ (a), 4 ~~(3)~~ (a), 5 ~~(3)~~ (a) | ~~39~~ C |
| 20 ~~22.~~ Automatic Trip Logic | 2 | 1 | 2 | N.A. | 1, 2 | ~~1~~ M |
| | 2 | 1 | 2 | N.A. | 3 ~~(3)~~ (a), 4 ~~(3)~~ (a), 5 ~~(3)~~ (a) | ~~39~~ C |

| | | | | |
|---|---|---|---|---|
| 19. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms | 1 each per RTB | N.A. | 1, 2, 3[a], 4[a], 5[a] | 40 Q<br>39 C |

(g) Including any reactor trip bypass breakers that are racked in and closed for bypassing an RTB.

(h) Above the P-7 (Low Power Reactor Trips Block) interlock.

(i) Above the P-9 (Power Range Neutron Flux) interlock.

A6 A7 A8 A6 A26 A21 L2 L6 M5 L14 M6 L15 A24 L9 A14 M18 BASES LA2 L2 L6 A24 L9



104

3.3.1-1

TABLE ~~3.3-1~~ (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

A6 A7 A8 A6

FUNCTION REQUIRED UNIT 2 OR OTHER SPECIFIED CONDITIONS CONDITION

| ~~FUNCTIONAL UNIT~~ | ~~TOTAL NO. OF CHANNELS~~ | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | ALLOWABLE VALUE | APPLICABLE MODES | ~~ACTION~~ |
|---|---|---|---|---|---|---|
| 17 ~~23~~. Reactor Trip System Interlocks | | | | | | |
| a. Intermediate Range Neutron Flux, P-6 | 2 | 1 | 2 | ≥ 9.0 x $10^{-11}$ amps | 2 (g) L7 | 44 O |
| c ~~b~~. Power Range Neutron Flux, P-8 | 4 | 2 | 3 | ≤ 30.5% of RTP* | 1 | 44 P |
| d ~~c~~. Power Range Neutron Flux, P-9 | 4 | 2 | 3 | ≤ 49.5% of RTP* | 1 | 44 P |
| e ~~d~~. Power Range Neutron Flux, P-10 | 4 | 2 | 3 | ~~≥ 9.5% RTP*~~ on increasing power and ≤ 10.5% RTP* on decreasing power | 1, 2 | 44 O |
| f ~~e~~. Turbine First Stage Pressure, P-13 | 2 | 1 | 2 | ~~≤ 10.5%~~ of RTP* turbine First Stage equivalent | 1 | 44 P |

BASES LA2 BASES LA4 M7 M8 M7

A15 turbine power

A10 ~~* = RATED THERMAL POWER~~

M1

| | | | | |
|---|---|---|---|---|
| b. Low Power Reactor Trips Block, P-7 | 1 per train | NA | 1 | P |

New Notes for Power Range Neutron Flux Low Trip Function Applicability

M21

(c) With $k_{eff}$ ≥ 1.0.

(d) With $k_{eff}$ < 1.0, and all RCS cold leg temperatures ≥ 500 °F, and RCS boron concentration ≤ the ARO critical boron concentration, when the Rod Control System capable of rod withdrawal or one or more rods not fully inserted.

(e) With all RCS cold leg temperatures ≥ 500 °F, and RCS boron concentration ≤ the ARO critical boron concentration, when the Rod Control System capable of rod withdrawal or one or more rods not fully inserted.

3.3.1-1

TABLE ~~3.3-1~~ (Continued)

L3

Below the P-10 (Power Range Neutron Flux) interlocks.

TABLE NOTATION

Below the P-6 (Intermediate Range Neutron Flux) interlocks.

L5

b (~~1~~) ~~Trip function may be manually bypassed in this MODE above P-10.~~

M2

g (~~2~~) ~~Trip function may be manually bypassed in this MODE above P-6.~~

or one or more rods not fully inserted.

A16

a (~~3~~) With ~~the reactor trip system breakers in the closed position and~~ the control rod drive system capable of rod withdrawal.

(9) In this condition, source range Function does not provide reactor trip but does provide indication.

A9

3.3.8

~~(A)~~: OVERTEMPERATURE ΔT

Note 3 (Unit 2)

The Overtemperature ΔT Function Allowable Value shall not exceed the following nominal trip setpoint by more than 0.5% ΔT span for the ΔT channel, 0.5% ΔT span for the $T_{avg}$ channel, 0.5% ΔT span for the Pressurizer Pressure channel and 0.5% ΔT span for the f(ΔI) channel.

$$\Delta T\frac{(1+\tau_1 S)}{(1+\tau_2 S)}\left(\frac{1}{1+\tau_3 S}\right)\le \Delta T_0\left\{K_1-K_2\frac{(1+\tau_4 S)}{(1+\tau_5 S)}\left[T\left(\frac{1}{1+\tau_6 S}\right)-T'\right]+K_3(P-P')-f_1(\Delta I)\right\}$$

where: ΔT is measured RCS ΔT, °F.

$\frac{1+\tau_1 S}{1+\tau_2 S}$ is the function generated by the lead-lag compensator on measured ΔT.

$\tau_1, \tau_2$ are the time constants utilized in the lead-lag compensator for ΔT specified in the COLR.

$\frac{1}{1+\tau_3 S}$ is the function generated by the lag compensator on measured ΔT.

$\tau_3$ is the time constant utilized in the lag compensator for ΔT specified in the COLR.

$\Delta T_0$ is the loop specific indicated ΔT at ~~RATED THERMAL POWER~~, °F.

RTP

$K_1$ is specified in the COLR.

$K_2$ is specified in the COLR.

$\frac{1+\tau_4 S}{1+\tau_5 S}$ is the function generated by the lead-lag compensator for $T_{avg}$.

$\tau_4, \tau_5$ are the time constants utilized in lead-lag compensator for $T_{avg}$ specified in the COLR.

3.3.1-1

TABLE ~~3.3-1~~ (Continued)

Note 3 (Unit 2)

TABLE NOTATION (Continued)

~~(A)~~: OVERTEMPERATURE ΔT (Continued)

$T$ is measured RCS average temperature, °F.

$\frac{1}{1+\tau_6 S}$ is the function generated by the lag compensator on measured $T_{avg}$.

$\tau_6$ is the time constant utilized in the lag compensator for $T_{avg}$ specified in the COLR.

RTP

$T'$ is $T_{avg}$ at ~~RATED THERMAL POWER~~ specified in the COLR.

$K_3$ is specified in the COLR.

$P$ is measured pressurizer pressure, psia.

$P'$ is nominal pressurizer pressure specified in the COLR.

$S$ is the Laplace transform operator, $sec^{-1}$.

$f_1(\Delta I)$ is a function of the indicated difference between top and bottom detectors of the power-range nuclear ion chambers as specified in the COLR.

~~(B)~~: OVERPOWER ΔT

Note 4 (Unit 2)

The Overpower ΔT Function Allowable Value shall not exceed the following nominal trip setpoint by more than 0.5% ΔT span for the ΔT channel and 0.5% ΔT span for the $T_{avg}$ channel.

$$\Delta T \frac{(1+\tau_1 S)}{(1+\tau_2 S)} \left(\frac{1}{1+\tau_3 S}\right) \le \Delta T_0 \left\{K_4 - K_5 \frac{(\tau_7 S)}{(1+\tau_7 S)} \frac{(1)}{(1+\tau_6 S)} T - K_6 \left[T \frac{(1)}{(1+\tau_6 S)} - T''\right]\right\}$$

where: $\Delta T$ is measured RCS ΔT, °F.

$\frac{1+\tau_1 S}{1+\tau_2 S}$ is the function generated by the lead-lag compensator on measured ΔT.

$\tau_1$, $\tau_2$ are time constants utilized in the lead-lag compensator for ΔT specified in the COLR.

$\frac{1}{1+\tau_3 S}$ is the function generated by the lag compensator on measured ΔT.

3.3.1-1

TABLE ~~3.3-1~~ (Continued)

TABLE NOTATION (Continued)

Note 4 (Unit 2)

~~(B)~~: OVERPOWER $\Delta T$ (Continued)

$\tau_3$ is the time constant utilized in the lag compensator for $\Delta T$ specified in the COLR.

$\Delta T_0$ is the loop specific indicated $\Delta T$ at ~~RATED THERMAL POWER~~, °F.

RTP

$K_4$ is specified in the COLR.

$K_5$ is specified in the COLR.

$\frac{\tau_7 S}{1+\tau_7 S}$ is the function generated by the rate-lag compensator for $T_{avg}$.

$\tau_7$ is the time constant utilized in the rate-lag compensator for $T_{avg}$ specified in the COLR.

$\frac{1}{1+\tau_6 S}$ is the function generated by the lag compensator on measured $T_{avg}$.

$\tau_6$ is the time constant utilized in the lag compensator for $T_{avg}$ specified in the COLR.

$K_6$ is specified in the COLR.

T is measured RCS average temperature, °F.

T" is $T_{avg}$ at ~~RATED THERMAL POWER~~ specified in the COLR.

S is the Laplace transform operator, $sec^{-1}$.

RTP

~~TABLE 3.3-1 (Continued)~~

One train inoperable

ACTION STATEMENTS

A17

train

~~ACTION 1~~ - ~~With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement~~, restore the inoperable ~~channel~~ to OPERABLE status within 6 hours or be in at least HOT STANDBY within the next 6 hours; however, one ~~channel~~ may be bypassed for up to 4 hours for surveillance testing ~~per Specification 4.3.1.1.1~~, provided the other ~~channel~~ is OPERABLE.

ITS Condition M

A22

~~ACTION 2~~ - With one power range neutron flux channel inoperable,(4) perform one of the following, as applicable:

ITS Condition D

~~a.~~ Power Range High Neutron Flux Channel

1. Place the inoperable channel in trip within 6 hours and reduce THERMAL POWER to less than or equal to 75 percent RATED THERMAL POWER within the next 6 hours ~~and perform SR 4.2.4,~~ ~~(5)~~ or

L10

Once per 12 hours

2. Place the inoperable channel in trip within 6 hours and perform SR 4.2.4,(5) or

M3

ITS Condition E

3. Be in MODE 3 within 12 hours.

~~b.~~ All other channels

1. Place the inoperable channel in trip within 6 hours, or

2. Be in MODE 3 within 12 hours.

Note in ITS Action Conditions D and E

~~(4)~~ The inoperable channel may be bypassed for up to 4 hours for surveillance testing and setpoint adjustment of other channels.

~~(5)~~ Only required to be performed when the power range high neutron flux channel input to QPTR is inoperable.

Note in ITS Action Condition D

M9 Unit 1 Only. Replace with ITS Condition O.

L17 ~~TABLE 3.3-1 (Continued)~~

Replace with ITS Conditions F and G

L11

~~ACTION 3~~ - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. Below P-6, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 setpoint.

b. Above P-6 but below 5 percent of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5 percent of RATED THERMAL POWER.

c. Above 5 percent of RATED THERMAL POWER, POWER OPERATION may continue.

L12 ITS Condition H

A19

NOTE: Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM.

~~ACTION 4~~ - ~~a.~~ MODE 2 (Below P-6); with one source range neutron flux channel inoperable, immediately suspend operations involving positive reactivity additions.

ITS Condition J

~~b.~~ MODE 3, 4 and 5; with one source range neutron flux channel inoperable, restore the inoperable channel to OPERABLE status within 48 hours or ~~open the reactor trip breakers within the next hour.~~

Initiate action to fully insert all rods and place the rod control system in a condition incapable of rod withdrawal in 49 hours.

L13 ITS Condition I

~~c.~~ MODE 2 (Below P-6), 3, 4 and 5; with two source range neutron flux channels inoperable, immediately open the reactor trip breakers.

ACTION 5 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement:

a. Suspend operations involving positive reactivity additions,[(7)] and

b. Close unborated water source isolation valves (2CHS-91, 2CHS-96 and 2CHS-138) or (2CHS-37 and 2CHS-828) within 1 hour, and

c. Perform Surveillance Requirement 4.1.1.1.1 or 4.1.1.2, as applicable, within the next hour and at least once per 12 hours thereafter.

~~ACTION 6 - This Action is not used.~~

ITS 3.3.8 A9

(7) Plant cooldown is allowable provided the temperature change is accounted for in the calculated shutdown margin.

ITS Cond L One Turbine Trip channel inoperable

ITS Cond. E and K One channel inoperable

ITS Condition E
ITS Condition K
ITS Condition L

A21

~~TABLE 3.3-1 (Continued)~~ A17

~~ACTION 7~~ - ~~With the number of OPERABLE channels[(6)] one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:~~ OR K.2 Reduce Thermal Power to < P-7 in 12 hours.

M4 E.1 M4

~~a.~~ The inoperable channel is placed in the tripped condition within 6 hours, and

OR E.2 Be in Mode 3 in 12 hours

OR L.2 Reduce Thermal Power to < P-9 in 10 hours

b. ~~The Minimum Channels OPERABLE requirement is met; however,~~ the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels ~~per Specification 4.3.1.1.1~~.

Cond. E Note
Cond. K Note
Cond. L Note

A17 A20

~~ACTION 8~~ - ~~With the number of OPERABLE channels one less than the Total Number of Channels and with the THERMAL POWER level above P-9, place the inoperable channel in the tripped condition within 6 hours; operation may continue until performance of the next required CHANNEL FUNCTIONAL TEST.~~

ITS Condition L

M5 L14

~~ACTION 9 - This Action is not used.~~ One channel inoperable A17

~~ACTION 10 - This Action is not used.~~

Note: The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels.

~~ACTION 11~~ - ~~With less than the Minimum Number of Channels OPERABLE, operation may continue provided~~ the inoperable channel is placed in the tripped condition ~~within 6 hours.~~

ITS Condition K M6 L15

ITS Condition B

OR K.2 Reduce Thermal Power to < P-7 in 12 hours

One Manual Reactor Trip Channel Inoperable.

~~ACTION 12~~ - ~~With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement,~~ restore the inoperable channel to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours ~~and/or open the reactor trip breakers~~.

ITS Condition C One channel or train inoperable.

L8 A17

or train

~~ACTION 39~~ - ~~With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement,~~ restore the inoperable channel to OPERABLE status within 48 hours or ~~open the reactor trip breakers within the next hour~~.

L9

Initiate Action to fully insert all rods in 48 hours and place the rod control system in a condition incapable of rod withdrawal in 49 hours

---

~~(6)~~ An OPERABLE hot leg channel consists of: 1) three RTDs per hot leg, or 2) two RTDs per hot leg with the failed RTD disconnected and the required bias applied.

BASES for OT Functions LA5

M20

2. One RTB may be bypassed for up to 2 hours for maintenance on undervoltage or shunt trip mechanisms, provided the other train is OPERABLE.

~~TABLE 3.3-1 (Conti~~

A24

~~ACTION 40~~ - ~~a.~~ With one of the diverse trip features (undervoltage or shunt trip attachment) of a reactor trip breaker inoperable, restore the diverse trip feature to OPERABLE status within 48 hours or declare the breaker inoperable and be in HOT STANDBY within the next 6 hours. ~~Neither breaker~~ shall be bypassed ~~while~~ one of the diverse trip ~~features is~~ inoperable except for the time ~~required~~ for ~~performing~~ maintenance ~~to restore the breaker to OPERABLE status.~~

ITS Condition Q

M20

ITS Condition N Note 2

train

A17

A24

~~b.~~ With one reactor trip breaker ~~inoperable as a result of something other than an inoperable diverse trip feature~~, be ~~in~~ at least HOT STANDBY within 6 hours; ~~however,~~ one ~~channel~~ may be bypassed for up to 2 hours for surveillance testing ~~per Specification 4.3.1.1.1~~, provided the other ~~channel~~ is OPERABLE.

ITS Condition N

ITS Condition N Note 1

verify

A23

~~ACTION 44~~ - ~~With less than the Minimum Number of Channels OPERABLE,~~ within 1 hour determine by observation of ~~the associated permissive annunciator window(s)~~ that the interlock is in its required state for the existing plant condition, or ~~apply Specification 3.0.3.~~

ITS Condition O
ITS Condition P

One or more channels inoperable

O.2 Be in Mode 3 in 7 hours

N.1 Restore train to operable status in one hour. OR N.2

P.2 Be in Mode 2 in 7 hours

M7

Bases

L16

LA6

M8

M21

R. One channel inoperable

---NOTE---

The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels.

---

R.1 Place channel in trip in 6 hours

S. Required Action and associated Completion Time of Condition R not met. OR Two or more channels inoperable.

S.1.1 Initiate action to fully insert all rods immediately. AND

S.1.2 Initiate action to place the Rod Control System in a condition incapable of rod withdrawal immediately.

OR

S.2 Initiate action to borate the RCS to > an all rods out (ARO) critical boron concentration immediately.

A30

ITS SR 3.3.1.14 Verify RTS Response Time is within limits.

A28

Changes to Functions are addressed in markup of Table 3.3-1

A29

CHANNEL OPERATIONAL TEST (COT) OR TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT) OR ACTUATION LOGIC TEST

A28

Changes to Modes are addressed in markup of Table 3.3-1

~~TABLE 4.3-1~~

~~REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS~~

| Functional Unit | Channel Check | Channel Calibration | ~~Channel Functional Test~~ | ~~Modes in Which Surveillance Required~~ |
|---|---|---|---|---|
| 1. Manual Reactor Trip | N.A. | N.A. | ~~S/U$^{(1)}$~~, R$^{(10)}$ | 1, 2, 3$^{(14)}$, 4$^{(14)}$, 5$^{(14)}$ |
| 2. Power Range, Neutron Flux | | | | |
| a. High Setpoint | S | ~~D$^{(2)}$~~, ~~M$^{(3)}$~~ and ~~Q$^{(6)}$~~ | Q | 1, 2 |
| b. Low Setpoint | S | R$^{(6)}$ | ~~S/U$^{(1)}$~~ | 1$^{(7)}$, 2 |
| 3. Power Range, Neutron Flux, High Positive Rate | N.A. | R$^{(6)}$ | Q | 1, 2 |
| 4. DELETED | | | | |
| 5. Intermediate Range, Neutron Flux | S | R$^{(6)}$ | ~~S/U$^{(1)}$~~ | 1, 2, ~~3$^{(14)}$~~, ~~4$^{(14)}$~~, ~~5$^{(14)}$~~ |
| 6. Source Range$^{(15)}$, Neutron Flux | | | | |
| a. With Rod Withdrawal Capability | S | R$^{(6)}$ | Q$^{(8)}$ | 2, ~~3$^{(14)}$~~, ~~4$^{(14)}$~~ ~~and 5$^{(14)}$~~ |
| ~~b. With All Rods Inserted and Without Rod Withdrawal Capability~~ | ~~S~~ | ~~R$^{(6)}$~~ | ~~Q$^{(8)}$~~ | ~~3, 4 and 5~~ |
| 7. Overtemperature ΔT | S | R$^{(6)}$ | Q | 1, 2 |
| 8. Overpower ΔT | S | R | Q | 1, 2 |
| 9. Pressurizer Pressure-Low (Above P-7) | S | R | Q | 1, 2 |
| 10. Pressurizer Pressure-High | S | R | Q | 1, 2 |
| 11. Pressurizer Water Level-High (Above P-7) | S | R | Q | 1, 2 |

L28 SR 3.3.1.10

SR 3.3.1.1

SR 3.3.1.2

SR 3.3.1.3

SR 3.3.1.10

SR 3.3.1.9

M14 SR 3.3.1.10

M19

SR 3.3.1.12

L23

LA7 Bases

SR 3.3.1.6

SR 3.3.1.7

M13 L24

SR 3.3.1.6

L19 (b)

SR 3.3.1.1

SR 3.3.1.10

SR 3.3.1.7

M13 L24

L20 (d)

M15 SR 3.3.1.6

M14

SR 3.3.1.3 & SR 3.3.1.9

SR 3.3.1.1

SR 3.3.1.10

A34

SR 3.3.1.6

SR 3.3.1.10

A30

ITS SR 3.3.1.14 Verify RTS Response Time is within limits.

A28

Changes to Functions are addressed in markup of Table 3.3-1

A29

CHANNEL OPERATIONAL TEST (COT) OR TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT) OR ACTUATION LOGIC TEST

DRAFT PAGE FROM UNIT 2 LAR # 181

A28

Changes to Modes are addressed in markup of Table 3.3-1

~~TABLE 4.3-1 (Co~~

~~REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS~~

| Functional Unit | Channel Check | Channel Calibration | ~~Channel Functional Test~~ | ~~Modes in Which Surveillance Required~~ |
|---|---|---|---|---|
| ~~12. Loss of Flow - Single Loop (Above P-8)~~ | ~~S~~ | ~~R~~ | ~~Q~~ | ~~1~~ |
| ~~13. Loss of Flow - Two Loop (Above P-7 and Below P-8)~~ | ~~S~~ SR 3.3.1.1 | ~~R~~ SR 3.3.1.10 | ~~Q~~ SR 3.3.1.6 | ~~1~~ |
| ~~14. Steam/Generator Water Level-Low-Low~~ | ~~S~~ | ~~R~~ | ~~Q~~ | ~~1, 2~~ |
| ~~15. DELETED.~~ | | | | |
| ~~16. Undervoltage-Reactor Coolant Pumps (Above P-7)~~ | N.A. | ~~R~~ SR 3.3.1.10 | ~~Q~~ SR 3.3.1.8 (L25) | ~~1~~ |
| ~~17. Underfrequency-Reactor Coolant Pumps (Above P-7)~~ | N.A. | ~~R~~ | ~~Q~~ | ~~1~~ |
| ~~18. Turbine Trip (Above P-9)~~ | | | | |
| ~~A. Emergency Trip Header Low Pressure~~ | N.A. | R SR 3.3.1.10 | ~~S/U(1)~~ SR 3.3.1.13 (L26) | ~~1, 2~~ (L21) |
| ~~B. Turbine Stop Valve Closure~~ | N.A. | R | ~~S/U(1)~~ | ~~1, 2~~ |
| ~~19. Safety Injection Input from ESF~~ | N.A. | N.A. | ~~R~~ SR 3.3.1.12 (A31) | ~~1, 2~~ |
| ~~20. Reactor Coolant Pump Breaker Position Trip (Above P-7)~~ | N.A. | N.A. | ~~R~~ | N.A. |
| ~~21. Reactor Trip Breaker~~ | N.A. | N.A. | SR 3.3.1.4 M(~~5,~~ 11) ~~and S/U(1)~~ (L27) Bases (LA8) | ~~1, 2, 3(14), 4(14), 5(14)~~ |

~~TABLE 4.3-1 (C~~

~~REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS~~

A29 — CHANNEL OPERATIONAL TEST (COT) OR TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT) OR ACTUATION LOGIC TEST

A28 — Changes to Functions are addressed in markup of Table 3.3-1

A28 — Changes to Modes are addressed in markup of Table 3.3-1

| Functional Unit | Channel Check | Channel Calibration | ~~Channel Functional Test~~ | ~~Modes in Which Surveillance Required~~ |
|---|---|---|---|---|
| 22. Automatic Trip Logic | N.A. | N.A. | M~~(5)~~ (SR 3.3.1.5) | ~~1, 2, 3(14), 4(14), 5(14)~~ |
| 23. Reactor Trip System Interlocks | | (SR 3.3.1.10) | (SR 3.3.1.11) | (L22) |
| A. Intermediate Range Neutron Flux, P-6 | N.A. | R~~(6)~~ | R | ~~1,~~ 2 |
| B. Power Range Neutron Flux, P-8 | N.A. | R~~(6)~~ | R | 1 |
| C. Power Range Neutron Flux, P-9 | N.A. | R~~(6)~~ | R | 1 |
| D. Power Range Neutron Flux, P-10 | N.A. | R~~(6)~~ | R | 1, 2 |
| E. Turbine First Stage Pressure, P-13 | N.A. | R | R | 1 |
| 24. Reactor Trip Bypass Breakers | N.A. | N.A. | M(12) (SR 3.3.1.4) R(13) (SR 3.3.1.12) | ~~1, 2, 3(14), 4(14), 5(14)~~ |

Note in SR 3.3.1.4

Bases

LA9

LA10 — Bases for SR 3.3.1.12

A32 — Combined with RTBs. SR 3.3.1.4 is applicable to both the RTBs and the Bypass Breakers.

A32 — Combined with the Manual Reactor Trip Function in SR 3.3.1.12

M1 — Low Power Reactor Trips Block, P-7 SR 3.3.1.5

Adjust power range channel if calorimetric heat balance calculation results exceed power range channel output by more than + 2% RTP. Not required to be performed until 24 hours after THERMAL POWER is ≥ 15% RTP.

M11

DRAFT PAGE FROM UNIT 2 LAR # 182

~~TABLE 4.3-1 (C~~ SR 3.3.1.13

SR 3.3.1.2

L23 L24 L27

TABLE NOTATION

Not required to be performed until 7 days after THERMAL POWER is > 50% RTP.

~~(1)~~ - If not performed in previous 31 days.

~~(2)~~ - ~~Heat balance only, above 15 percent of RATED THERMAL POWER.~~

M12

~~(3)~~ - At least once every 31 Effective Full Power Days (EFPD) compare incore to excore axial imbalance above 50 percent of RATED THERMAL POWER. ~~Recalibrate~~ Adjust if absolute difference greater than or equal to 3 percent.

SR 3.3.1.3 Notes

A35

~~(4) (Not Used).~~ Frequency of SR 3.3.1.4 & SR 3.3.1.5

~~(5)~~ - Each train tested every other month on a STAGGERED TEST BASIS.

~~(6)~~ - Neutron detectors may be excluded from CHANNEL CALIBRATION.

Note in SR 3.3.1.10

~~(7)~~ - ~~Below P-10.~~

A28

~~(8)~~ - Below P-6, not required to be performed for source range instrumentation ~~prior to entering MODE 3 from MODE 2~~ until 12 hours after ~~entry into MODE 3~~ power has been reduced below P-6.

Applicability

M15

~~(9) (Not Used)~~ SR 3.3.1.12 Bases

LA7

~~(10)~~ - The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip circuits for the Manual Reactor Trip Function. The test shall also verify the OPERABILITY of the Bypass Breaker trip circuit(s).

~~(11)~~ - The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip attachments of the Reactor Trip Breakers.

LA9

SR 3.3.1.4 Bases

LA8

~~(12)~~ - Local manual shunt trip prior to placing breaker in service.

SR 3.3.1.4 Bases

Note in SR 3.3.1.4

~~(13)~~ - Automatic undervoltage trip.

SR 3.3.1.12 Bases

LA10

~~(14)~~ - ~~With the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal.~~

A28

(15) - Surveillance Requirements need not be performed on alternate detectors until connected and required for OPERABILITY.

ITS 3.3.8

A9

DRAFT PAGE FROM UNIT 2 LAR # 173
(UNIT 1 LAR # 302

## UNIT 1 PAGES

## REACTOR TRIP SYSTEM

Changes to this Unit 1 material are addressed in the Unit 2 markup.

A1

TABLE 3.3-1

A8

Unit 1

REACTOR TRIP SYSTEM INSTRUMENTATION

| FUNCTIONAL UNIT | TOTAL NO. OF CHANNELS | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | ALLOWABLE VALUE | APPLICABLE MODES | ACTION |
|---|---|---|---|---|---|---|
| 1. Manual Reactor Trip | 2 | 1 | 2 | Not Applicable | 1, 2, 3$^{(3)}$, 4$^{(3)}$ and 5$^{(3)}$ | 12 |
| 2. Power Range, Neutron Flux | | | | | | |
| a. High Setpoint | 4 | 2 | 3 | ≤ 109.5% of RATED THERMAL POWER | 1, 2 | 2 |
| b. Low Setpoint | 4 | 2 | 3 | ≤ 25.5% OF RATED THERMAL POWER | 1$^{(1)}$, 2 | 2 |
| 3. Power Range, Neutron Flux High Positive Rate | 4 | 2 | 3 | ≤ 5.5% of RATED THERMAL POWER with a time constant ≥ 2 seconds | 1, 2 | 2 |
| 4. DELETED | | | | | | |
| 5. Intermediate Range, Neutron Flux | 2 | 1 | 2 | ≤ 27.9% of RATED THERMAL POWER | 1$^{(1)}$, 2, 3$^{(3)}$, 4$^{(3)}$ and 5$^{(3)}$ | 3 |
| 6. Source Range, Neutron Flux | | | | | | |
| a. With Rod Withdrawal Capability | 2 | 1 | 2 | ≤ 1.3 x $10^5$ counts per second | 2$^{(2)}$, 3$^{(3)}$, 4$^{(3)}$ and 5$^{(3)}$ | 4 |
| b. With All Rods Fully Inserted and Without Rod Withdrawal Capability | 2 | 0 | 1 | Not Applicable | 3$^{(8)}$, 4$^{(8)}$, and 5$^{(8)}$ | 5 |

Changes to this Unit 1 material are addressed in the Unit 2 markup.

Changes to this Unit 1 material are addressed in the Unit 2 markup.

DRAFT PAGE FROM UNIT 1 LAR # 302

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

Unit 1

A8

| | FUNCTIONAL UNIT | TOTAL NO. OF CHANNELS | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | ALLOWABLE VALUE | APPLICABLE MODES | ACTION |
|---|---|---|---|---|---|---|---|
| 7. | Overtemperature ΔT | 3 | 2 | 2 | See Table Notation (A) | 1, 2 | 7 |
| 8. | Overpower ΔT | 3 | 2 | 2 | See Table Notation (B) | 1, 2 | 7 |
| 9. | Pressurizer Pressure-Low (Above P-7) | 3 | 2 | 2 | ≥ 1941 psig | 1, 2 | 7 |
| 10. | Pressurizer Pressure-High | 3 | 2 | 2 | ≤ 2389 psig | 1, 2 | 7 |
| 11. | Pressurizer Water Level-High (Above P-7) | 3 | 2 | 2 | ≤ 92.5% of ~~instrument span~~ | 1, 2 | 7 |
| 12. | Loss of Flow - Single Loop (Above P-8) | 3/loop | 2/loop in any operating loop | 2/loop in each operating loop | ≥ 89.8% of indicated loop flow | 1 | 7 |
| 13. | Loss of Flow - Two Loops (Above P-7 and below P-8) | 3/loop | 2/loop in two operating loops | 2/loop each operating loop | ≥ 89.8% of ~~indicated loop flow~~ | 1 | 7 |
| 14. | Steam Generator Water Level-Low-Low ~~(Loop Stop Valves Open)~~ | 3/loop | 2/loop | 2/loop | ≥ 19.1% of narrow range instrument span-each steam generator | 1, 2 | 7 |

A25

Changes to this Unit 1 material are addressed in the Unit 2 markup.

Changes to this Unit 1 material are addressed in the Unit 2 markup.

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

Unit 1

A8

| FUNCTIONAL UNIT | TOTAL NO. OF CHANNELS | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | ALLOWABLE VALUE | APPLICABLE MODES | ACTION |
|---|---|---|---|---|---|---|
| 15. Deleted | | | | | | |
| 16. Undervoltage-Reactor Coolant Pumps (Above P-7) | 3-1/bus | 2 | 2 | 2962 V ≥ ~~71.2% of rated bus voltage each bus~~ | 1 | 7 |
| 17. Underfrequency-Reactor Coolant Pumps (Above P-7) | 3-1/bus | 2 | 2 | ≥ 57.4 Hz - each bus | 1 | 7 |
| 18. Turbine Trip (Above P-9) | | | | | | |
| A. Auto Stop Oil Pressure | 3 | 2 | 2 | ≥ 42.9 psig | 1 | 7 |
| B. Turbine Stop Valve Closure | 4 | 4 | 4 | ≥ 1% open | 1 | 8 |
| 19. Safety Injection Input from ESF | 2 | 1 | 2 | Not Applicable | 1, 2 | 1 |
| 20. Reactor Coolant Pump Breaker Position Trip (Above P-7) | 1/breaker | 2 | 1/breaker per operating loop | Not Applicable | 1 | 11 |

A26

Unit 1

Changes to this Unit 1 material are addressed in the Unit 2 markup.

Changes to this Unit 1 material are addressed in the Unit 2 markup.

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION Unit 1

A8

| FUNCTIONAL UNIT | TOTAL NO. OF CHANNELS | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | ALLOWABLE VALUE | APPLICABLE MODES | ACTION |
|---|---|---|---|---|---|---|
| 21. Reactor Trip Breakers | 2 | 1 | 2 | Not Applicable | 1, 2 | 40 |
| | 2 | 1 | 2 | Not Applicable | $3^{(3)}$, $4^{(3)}$, $5^{(3)}$ | 39 |
| 22. Automatic Trip Logic | 2 | 1 | 2 | Not Applicable | 1, 2 | 1 |
| | 2 | 1 | 2 | Not Applicable | $3^{(3)}$, $4^{(3)}$, $5^{(3)}$ | 39 |
| 23. Reactor Trip System Interlocks | | | | | | |
| A. Intermediate Range Neutron Flux, P-6 | 2 | 1 | 1 | $\geq 9.0 \times 10^{-11}$ Amps | 2 | 3 |
| B. Power Range Neutron Flux, P-8 | 4 | 2 | 3 | ≤ 30.5% RATED THERMAL POWER | 1 | ~~12~~ 12 |
| C. Power Range Neutron Flux, P-9 | 4 | 2 | 3 | ≤ 49.5% RATED THERMAL POWER | 1 | 12 |
| D. Power Range Neutron Flux, P-10 | 4 | 2 | 3 | ≥ 9.5% RATED ~~THERMAL POWER~~ on ~~increasing power~~ and ≤ 10.5% RATED ~~THERMAL POWER~~ on ~~decreasing power~~ | 1 ,2 | ~~12~~ |
| E. Turbine First Stage Pressure, P-13 | 2 | 1 | 1 | ≤ 10.5% of RTP Turbine First Stage Equivalent | 1 | ~~12~~ |

M9 O L17 P L18 O M10 P

Changes to this Unit 1 material are addressed in the Unit 2 markup.

DRAFT PAGE FROM UNIT 1 LAR # 302
(UNIT 2 LAR # 173

TABLE 3.3-1 (Continued)

TABLE NOTATION

(1) Trip function may be manually bypassed in this Mode above P-10.

(2) Trip function may be manually bypassed in this Mode above P-6.

Changes to this Unit 1 material are addressed in the Unit 2 markup.

(3) W[illegible] and the control rod drive system capable of rod withdrawal.

(8) In this condition, source range Function does not provide reactor trip but does provide indication.

~~(A)~~ Overtemperature $\Delta T$ Note 1 (Unit 1)

The Overtemperature $\Delta T$ Function Allowable Value shall not exceed the following nominal trip setpoint by more than 0.5% $\Delta T$ span for the $\Delta T$ channel, 0.5% $\Delta T$ span for the $T_{avg}$ channel, 0.5% $\Delta T$ span for the Pressurizer Pressure channel and 0.5% $\Delta T$ span for the f($\Delta I$) channel.

$$\Delta T \frac{1}{(1+\tau_4 S)} \leq \Delta T_0 \left[K_1 - K_2 \left(\frac{1+\tau_1 S}{1+\tau_2 S}\right)\left[T\frac{1}{(1+\tau_5 S)} - T'\right] + K_3 \left(P - P'\right) - f(\Delta I)\right]$$

where: $\Delta T$ is measured RCS $\Delta T$, °F.

$\Delta T_0$ is loop specific indicated $\Delta T$ at ~~RATED THERMAL POWER~~ RTP, °F.

T is measured RCS average temperature, °F.

T' is $T_{avg}$ at ~~RATED THERMAL POWER~~ RTP specified in the COLR.

P is measured pressurizer pressure, psia.

P' is nominal pressurizer pressure specified in the COLR.

$\frac{1+\tau_1 S}{1+\tau_2 S}$ is the function generated by the lead-lag compensator for $T_{avg}$.

$\tau_1$ & $\tau_2$ are the time constants utilized in the lead-lag compensator for $T_{avg}$ specified in the COLR.

$\frac{1}{(1+\tau_4 S)}$ is the function generated by the lag compensator for measured $\Delta T$.

$\frac{1}{(1+\tau_5 S)}$ is the function generated by the lag compensator for measured $T_{avg}$.

DRAFT PAGE FROM UNIT 1 LAR # 302
(UNIT 2 LAR # 173

TABLE 3.3-1 (Continued)

Note 1 (Unit 1)

TABLE NOTATION (Continued)

~~(A)~~: Overtemperature ΔT (Continued)

$\tau_4$ & $\tau_5$ are the time constants utilized in the lag compensators for the ΔT and $T_{avg}$, respectively, specified in the COLR.

S is the Laplace transform operator, $sec^{-1}$.

$K_1$ is specified in the COLR.

$K_2$ is specified in the COLR.

$K_3$ is specified in the COLR.

f(ΔI) is a function of the indicated difference between top and bottom detectors of the power-range nuclear ion chambers as specified in the COLR.

Note 2 (Unit 1)

~~(B)~~: Overpower ΔT

The Overpower ΔT Function Allowable Value shall not exceed the following nominal trip setpoint by more than 0.5% ΔT span for the ΔT channel and 0.5% ΔT span for the $T_{avg}$ channel.

$$\Delta T\frac{1}{(1+\tau_4 S)} \leq \Delta T_0\left[K_4 - K_5\left(\frac{\tau_3 S}{1+\tau_3 S}\right) T\frac{1}{(1+\tau_5 S)} - K_6\left[T\frac{1}{(1+\tau_5 S)} - T''\right]\right]$$

where: ΔT is measured RCS ΔT, °F.

$\Delta T_0$ is loop specific indicated ΔT at ~~RATED THERMAL POWER~~, °F.

T is measured RCS average temperature, °F. RTP

T" is $T_{avg}$ at ~~RATED THERMAL POWER~~ specified in the COLR.

$K_4$ is specified in the COLR.

$K_5$ is specified in the COLR.

$K_6$ is specified in the COLR.

$\frac{\tau_3 S}{1+\tau_3 S}$ is the function generated by the rate lag compensator for $T_{avg}$.

$\tau_3$ is the time constant utilized in the rate lag compensator for $T_{avg}$ specified in the COLR.

TABLE 3.3-1 (Continued)

Note 2 (Unit 1)

TABLE NOTATION (Continued)

~~(B)~~: Overpower $\Delta T$ (Continued)

$\frac{1}{(1+\tau_4 S)}$ is the function generated by the lag compensator for measured $\Delta T$.

$\frac{1}{(1+\tau_5 S)}$ is the function generated by the lag compensator for measured $T_{avg}$.

$\tau_4 \& \tau_5$ are the time constants utilized in the lag compensators for the $\Delta T$ and $T_{avg}$, respectively, specified in the COLR.

S is the Laplace transform operator, $sec^{-1}$.

TABLE 3.3-1 (Continued)

ACTION 3 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. Below P-6, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 setpoint.

b. Above P-6 but below 5 percent of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5 percent of RATED THERMAL POWER.

c. Above 5 percent of RATED THERMAL POWER, POWER OPERATION ...

**Changes to this Unit 1 material are addressed in the Unit 2 markup.**

ACTION 4 - a. MODE 2 (Below P-6), with one source range neutron flux channel inoperable, immediately suspend operations involving positive reactivity additions.

b. MODE 3, 4 and 5; with one source range neutron flux channel inoperable, restore the inoperable channel to OPERABLE status within 48 hours or open the reactor trip breakers within the next hour.

c. MODE 2 (Below P-6), 3, 4 and 5; with two source range neutron flux channels inoperable, immediately open the reactor trip breakers.

ACTION 5 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement:

A9

a. Suspend operations involving positive reactivity additions,(7) and

ITS 3.3.8

~~b.~~ Close unborated water source isolation valve(s) (1CH-90) or (1CH-91 and 1CH-93) within 1 hour, and

c. Perform Surveillance Requirement 4.1.1.1.1 or 4.1.1.1.2, as applicable, within the next hour and at least once per 12 hours thereafter.

ACTION 6 - Not Applicable.

**Changes to this Unit 1 material are addressed in the Unit 2 markup.**

---

(7) Plant cooldown is allowable provided the temperature change is accounted for in the calculated shutdown margin.

TABLE 3.3-1 (Continued)

**Changes to this Unit 1 material are addressed in the Unit 2 markup.**

ACTION 7 - With the number of OPERABLE channels[6] one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 6 hours, and

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.1.1.1.

ACTION 8 - With the number of OPERABLE channels one less than the Total Number of Channels and with the THERMAL POWER level above P-9, place the inoperable channel in the tripped condition within 6 hours; operation may continue until performance of the next required CHANNEL FUNCTIONAL TEST.

ACTION 9 - Not applicable.

ACTION 10 - Not applicable.

ACTION 11 - With less than the Minimum Number of Channels OPERABLE, operation may continue provided the inoperable channel is placed in the tripped condition within 6 hours.

L18

M9

Unit 1 only. Replace with ITS Conditions O and P for RTS Interlocks

ACTION 12 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours and/or open the reactor trip breakers.

ACTION 39 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or open the reactor trip breakers within the next hour.

---

(6) An OPERABLE hot leg channel consists of: 1) three RTDs per hot leg, or 2) two RTDs per hot leg with the failed RTD disconnected and the required bias applied.

**Changes to this Unit 1 material are addressed in the Unit 2 markup.**

Changes to this Unit 1 material are addressed in the Unit 2 markup.

DRAFT PAGE FROM UNIT 1 LAR # 302 (UNIT 2 LAR # 173)

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| | Functional Unit | Channel Check | Channel Calibration | Channel Functional Test | Modes in Which Surveillance Required |
|---|---|---|---|---|---|
| 1. | Manual Reactor Trip | N.A. | N.A. | S/U(1), R(10) | ~~N.A.~~ 1, 2, 3(a), 4(a), 5(a) |
| 2. | Power Range, Neutron Flux | | | | |
| | a. High Setpoint | S | D(2), M(3) and Q(6) | Q | 1, 2 |
| | b. Low Setpoint | S | R(6) | S/U(1) | 1(b) 2 |
| 3. | Power Range, Neutron Flux, High Positive Rate | N.A. | R(6) | Q | 1, 2 |
| 4. | DELETED | | | | |
| 5. | Intermediate Range, Neutron Flux | S | R(6) | S/U(1) | 1, 2, 3(14), 4(14), 5(14) |
| 6. | Source Range(15), Neutron Flux | | | | |
| | a. With Rod Withdrawal Capability | S | R(6) | Q(8) | 2, 3(14), 4(14) and 5(14) |
| | b. With All Rods Fully Inserted and Without Rod Withdrawal Capability | S | R(6) | Q(8) | 3, 4 and 5 |
| 7. | Overtemperature ΔT | S | R(6) | Q | 1, 2 |
| 8. | Overpower ΔT | S | R | Q | 1, 2 |
| 9. | Pressurizer Pressure-Low | S | R | Q | 1, 2 |
| 10. | Pressurizer Pressure-High | S | R | Q | 1, 2 |
| 11. | Pressurizer Water Level-High | S | R | Q | 1, 2 |

M17

M17

(a) With Rod Control System capable of rod withdrawal or one or more rods not fully inserted.
(b) Below the P-10 (Power Range Neutron Flux) interlocks.

Changes to this Unit 1 material are addressed in the Unit 2 markup.

4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| | Functional Unit | Channel Check | Channel Calibration | Channel Functional Test | Modes in Which Surveillance Required |
|---|---|---|---|---|---|
| 12. | Loss of Flow - Single Loop | S | R | Q | 1 |
| 13. | Loss of Flow - Two Loops | S | R | Q | 1 |
| 14. | Steam/Generator Water Level-Low-Low | S | R | Q | 1, 2 |
| 15. | DELETED | | | | |
| 16. | Undervoltage-Reactor Coolant Pumps | N.A. | R | Q | 1 |
| 17. | Underfrequency-Reactor Coolant Pumps | N.A. | R | Q | 1 |
| 18. | Turbine Trip | | | | |
| | a. Auto Stop Oil Pressure | N.A. | ~~N.A.~~ SR 3.3.1.10 | S/U(1) | 1, 2 |
| | b. Turbine Stop Valve Closure | N.A. | ~~N.A.~~ SR 3.3.1.10 | S/U(1) | 1, 2 |
| 19. | Safety Injection Input from ESF | N.A. | N.A. | R | 1, 2 |
| 20. | Reactor Coolant Pump Breaker Position Trip | N.A. | N.A. | R | N.A. |
| 21. | Reactor Trip Breaker | N.A. | N.A. | M(5,11) and S/U(1) | 1, 2, 3(14), 4(14), 5(14) |

M16

Changes to this Unit 1 material are addressed in the Unit 2 markup.

Changes to this Unit 1 material are addressed in the Unit 2 markup.

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| Functional Unit | Channel Check | Channel Calibration | Channel Functional Test | Modes in Which Surveillance Required |
|---|---|---|---|---|
| 22. Automatic Trip Logic | N.A. | N.A. | M(5) | 1, 2, 3(14), 4(14), 5(14) |
| 23. Reactor Trip System Interlocks | | | | |
| A. P-6 | N.A. | R(6) | R | 1, 2 |
| B. P-8 | N.A. | R(6) | R | 1 |
| C. P-9 | N.A. | R(6) | R | 1 |
| D. P-10 | N.A. | R(6) | R | 1 ,2 |
| E. P-13 | N.A. | R | R | 1 |
| 24. Reactor Trip Bypass Breakers | N.A. | N.A. | M(12), R(13), ~~S/U(1)~~ | 1, 2, 3(14), 4(14), 5(14) |

SR 3.3.1.4

L29

M10

Changes to this Unit 1 material are addressed in the Unit 2 markup.

DRAFT PAGE FROM UNIT 1 LAR # 310

TABLE 4.3-1 (Continued)

NOTATION

Changes to this Unit 1 material are addressed in the Unit 2 markup.

(1) - If not performed in previous 31 days.

(2) - Heat balance only, above 15 percent of RATED THERMAL POWER.

(3) - At least once every 31 Effective Full Power Days (EFPD) compare incore to excore axial imbalance above 50 percent of RATED THERMAL POWER. Recalibrate if absolute difference greater than or equal to 3 percent.

A33

(4) - (Not Used)

(5) - Each train tested every other month. On a STAGGERED TEST BASIS

(6) - Neutron detectors may be excluded from CHANNEL CALIBRATION.

(7) - Below P-10.

(8) - Below P-6, not required to be performed for source range instrumentation prior to entering MODE 3 from MODE 2 until 12 hours after entry into MODE 3.

(9) - (Not Used)

(10) - The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip circuits for the Manual Reactor Trip Function. The test shall also verify the OPERABILITY of the Bypass Breaker trip circuit(s).

(11) - The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip attachments of the Reactor Trip Breakers.

(12) - Local manual shunt trip prior to placing breaker in service.

(13) - Automatic undervoltage trip.

(14) - With the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal.

(15) - Surveillance Requirements need not be performed on alternate detectors until connected and required for OPERABILITY.

Changes to this Unit 1 material are addressed in the Unit 2 markup.

# 3.3A
# REACTOR TRIP SYSTEM INSTRUMENTATION
# DISCUSSION OF CHANGES

## CTS 3.3.1.1 Reactor Trip System (RTS) Instrumentation

ITS 3.1.1 Reactor Trip System Instrumentation
DISCUSSION OF CHANGE (DOC)

### *Less Restrictive Changes (L)*

L.1 *Unit 2 Only.* The *Unit 1 CTS does not have a corresponding requirement. (Category 6 - Relaxation of Surveillance Requirement Acceptance Criteria).* The CTS requirement for actuation logic test is revised to be consistent with the ISTS definition of ACTUATION LOGIC TEST. The CTS requirement in footnote 1 to surveillance 4.3.1.1.1 states "For the automatic trip logic, the surveillance requirements shall be the application of various simulated input combinations in conjunction with each possible interlock logic state and verification of the required logic output including, as a minimum, a continuity check of output devices". The ISTS definition of ACTUATION LOGIC TEST states "An ACTUATION LOGIC TEST shall be the application of various simulated or actual input combinations in conjunction with each possible interlock logic state required for OPERABILITY of a logic circuit and the verification of the required logic output. The ACTUATION LOGIC TEST, as a minimum, shall include a continuity check of output devices." The CTS and ISTS requirements are effectively the same with the exception of the ISTS allowance to use "simulated or actual" input combinations. This changes the CTS by allowing the use of an actual signal instead of a simulated signal to perform the Surveillance if sufficient information is collected to satisfy the surveillance test requirement.

This change is acceptable because the actuation logic can not discriminate between an "actual" or "simulated" signal and, therefore, the results of the testing are unaffected by the type of signal used to initiate the test. Operability is adequately demonstrated in either case. Therefore, this change does not adversely affect the safe operation of the plant. This change is designated as less restrictive because it allows an alternate method to be used to meet the Surveillance requirement.

L.2 *(Category 2 - Relaxation of Applicability)* The following CTS RTS Functions:

Function 9, Pressurizer Pressure Low,

Function 11, Pressurizer Water level High,

Function 13, Loss of Flow,

Function 16, Undervoltage RCP Bus,

Function 17, Under Frequency RCP Bus, and

Function 20, RCP Breaker Position

are interlocked with P-7. The P-7interlock is the low power reactor trip block. This interlock automatically defeats the associated RTS Functions when reactor power is decreased below approximately 10% RTP and automatically reinstates the trips when reactor power is increased above 10% RTP. The CTS Functions listed above are identified as applicable above P-7 as part of Function titles in CTS Table 3.3-1. However, the Applicable Modes identified for these RTS Functions in Table 3.3-1 require that the Functions be maintained operable throughout Mode 1 operation and in some cases during Mode 2 as well. The corresponding Functions in ISTS Table 3.3.1-1 that are interlocked with P-7 have an Applicability specified that only requires the Functions to be operable in Mode 1 above the P-7 interlock. The ITS does this by adding Footnote (h) to Mode 1 in the Required Applicability. The affected CTS Functions are revised to conform to the ISTS Applicability of Mode 1 above the P-7 interlock. This changes the CTS by eliminating the current Applicable Mode requirements below the P-7 interlock and adding ITS footnote (h) "Above the P-7 (Low Power Reactor Trips Block) interlock" to Mode 1 in the Applicability requirements for the Functions listed above.

The operation of the P-7 interlock is part of the standard Westinghouse Plant RTS design (as described in the ISTS Bases). The P-7 interlock blocks the affected RTS trip Functions at low power (approximately 10%). At power levels below P-7 the affected RTS Functions are not required for reactor protection. The applicable BVPS safety analyses do not credit the RTS Functions that are blocked by P-7 when reactor power is below the P-7 interlock. The proposed change to limit the Applicability of the RTS Functions listed above to Mode 1 above the P-7 interlock is consistent with the BVPS design and safety analysis assumptions. As such, the proposed change is acceptable because it makes the RTS TS conform more closely to the BVPS design and safety analyses. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.3 *(Category 2 - Relaxation of Applicability)* CTS table 3.3-1 Note (1) states that the "trip function may be manually bypassed in this MODE above P-10." The CTS Note is used to modify the applicability for certain RTS Functions associated with the P-10 interlock. The corresponding ISTS Note (b) states; "Below the P-10 (Power Range Neutron Flux) interlocks. The ISTS Note is also used to modify the Applicability of RTS Functions associated with the P-10 interlock. The CTS is revised to conform to the ISTS. This changes the CTS by relaxing the Mode 1 applicability such that the RTS Functions are only required operable below the P-10 interlock.

The CTS Note (1) allows the applicable RTS Functions to be manually bypassed above the P-10 interlock or in Mode 1 above approximately 10% RTP. The CTS allowance to bypass these RTS trip Functions above the P-10 interlock is in recognition that the affected Functions are required to mitigate the consequences of events initiated at low (below 10% RTP) power. Above the P-10 interlock the applicable safety analyses do not assume the affected RTS Functions are operable and therefore those trip Functions may be bypassed. Above the P-10 interlock, other RTS Functions (that are required to be operable at power levels > P-10) are assumed by the safety analyses to provide the required protection.

The ISTS version of CTS Note (1) more directly specifies the affected RTS Function operability in Mode 1 by stating it is only required (operable) below P-10. The ISTS Note is consistent with the intent of the CTS Note which indirectly specifies the same operability requirement by allowing the affected trip Functions to be bypassed above the P-10 interlock. However, the ISTS Note goes further than simply allowing the affected RTS Function to be bypassed. The ISTS note clearly identifies that the affected RTS trip Functions are not required operable above P-10. Conformance with the ISTS note is acceptable because it is consistent with the applicable safety analyses assumptions regarding the availability of the affected RTS trip Functions.

The BVPS safety analyses do not assume the operation of the affected RTS trip Functions to mitigate a design basis accident that initiates at a power level above P-10. In addition, the proposed change is consistent with the intent of the corresponding CTS Note (1) which allowed the affected RTS trip Functions to be bypassed (defeated) above P-10. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.4 *(Category 2 - Relaxation of Applicability)* The CTS Applicability for the Intermediate Range (IR) Neutron Flux RTS Function requires the Function Operable in Mode 1 (<P-10), Mode 2, and in Modes 3, 4, and 5 with the reactor trip breakers in the closed position and the control rod drive system capable of rod withdrawal. The ISTS applicability for the RTS IR Function only requires that Function operable in Mode 1 (<P-10) and in Mode 2 >P-6 (ISTS Note (c) to the Applicability). The CTS applicability is revised to conform to the ISTS applicability. This changes the CTS applicability by eliminating the requirement for the IR RTS Function to be operable below the P-6 interlock and adding ITS Note (f) to the Mode 2 applicability.

The CTS applicability requiring the IR RTS Function to be operable below P-6 in Modes 3, 4, and 5 with RTBs closed and the control rod drive system capable of rod withdrawal was part of the original BVPS Unit 1 License and incorporated into Unit 2 when it was originally licensed to keep the units the same. The Unit 1 original license was based on the standard Westinghouse TS included in NUREG-0452 Rev. 0. In revision 0 of the original standard TS for Westinghouse Plants the IR RTS Function was required operable with the RTBs closed and the control rod drive system capable of rod withdrawal. In later revisions of NUREG-0452 and in the ISTS, this conservative requirement for the IR RTS Function was revised to conform more closely with the applicable Westinghouse safety analyses. Consistent with the standard Westinghouse safety analyses, as explained in the ISTS bases, at power levels below the P-6 interlock the Source Range (SR) neutron flux trip provides the core protection for reactivity accidents. The IR RTS Function is not credited by any safety analyses for providing a protection function at power levels below the P-6 interlock. As such the ISTS Applicability does not require the IR Function to be operable at power levels below the P-6 interlock. The applicable BVPS Unit 1 & 2 safety analyses are consistent with the standard Westinghouse analyses as described in the ISTS bases. The BVPS design basis safety analyses do not credit the IR RTS Function for accident mitigation at power levels below P-6. Therefore, the proposed change to update the CTS Applicability to conform to the ISTS Applicability is acceptable. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.5 *(Category 2 - Relaxation of Applicability)* CTS table 3.3-1 Note (2) states that the "trip function may be manually bypassed in this MODE above P-6." The CTS Note is used to modify the applicability for the Source Range Instrumentation RTS Function. The corresponding ITS Note (g) states; "Below the P-6 (Intermediate Range Neutron Flux) interlocks. The ISTS Note is also used to modify the Applicability of the Source Range RTS Function. The CTS is revised to conform to the ISTS. This changes the CTS by relaxing the Mode 2 applicability of the Source Range RTS Function such that it is only required operable below the P-6 interlock.

The CTS Note (2) allows the Source Range RTS Function to be manually bypassed above the P-6 interlock or in Mode 2 above approximately $9.0 \times 10^{-11}$ Amps power. The CTS allowance to bypass the Source Range RTS trip Function above the P-6 interlock is in recognition that the Function is only required to mitigate the consequences of events initiated below the P-6 interlock power level. Above the P-6 interlock the applicable safety analyses do not assume the Source Range RTS Function is operable and therefore the Function may be bypassed. Above the P-6 interlock the Source Range neutron detectors are de-energized.

The ISTS version of CTS Note (1) more directly specifies the affected RTS Function operability in Mode 2 by stating it is only required (operable) below P-6. The ISTS Note is consistent with the intent of the CTS Note which indirectly specifies the same operability requirement by allowing the Source Range trip Function to be bypassed above the P-6 interlock. However, the ISTS Note goes further than simply allowing the Function to be bypassed. The ISTS note clearly identifies that the trip Function is not required operable above P-6. Conformance with the ISTS note is acceptable because it is consistent with the applicable safety analyses assumptions regarding the availability of the Source Range RTS trip Function and consistent with the Westinghouse design which includes de-energizing the Source Range detectors above P-6. The BVPS safety analyses do not assume the operation of the Source Range RTS trip Functions to mitigate a design basis accident that initiates at a power level above P-6. In addition, the proposed change is consistent with the intent of the corresponding CTS Note (2) which allowed the affected RTS trip Functions to be bypassed (defeated) above P-6. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.6 *(Category 2 - Relaxation of Applicability)* The CTS RTS Functions 18a and 18b, Turbine trip on low Emergency Trip Header pressure (Unit 2) or low Auto Stop Oil pressure (Unit 1) and Turbine Stop Valve Closure (both units) are interlocked with P-9. The P-9 interlock is a power range neutron flux interlock that automatically defeats the associated RTS Turbine Trip Functions when reactor power is decreased below approximately 49% RTP and automatically reinstates the trips when reactor power is increased above approximately 49% RTP. The CTS Turbine Trip Functions listed above are identified as applicable above P-9 as part of Function titles in CTS Table 3.3-1. However, the Applicable Modes identified for these RTS Functions in Table 3.3-1 require that the Functions be maintained operable throughout Mode 1 operation. The corresponding Functions in ISTS Table 3.3.1-1 that are interlocked with P-9 have an Applicability specified that only requires the Functions to be operable in Mode 1 above the P-9 interlock. The ITS does this by adding Footnote (i) to Mode 1 in the Required Applicability. The affected CTS Functions are revised to conform to the ISTS Applicability of Mode 1 above the P-9 interlock. This changes the CTS by eliminating the current Applicable Mode requirement below the P-9 interlock and adding ITS footnote (i) "Above the P-9 (Power Range Neutron Flux) interlock" to Mode 1 in the Applicability requirements for the Functions listed above.

The operation of the P-9 interlock is part of the standard Westinghouse Plant RTS design (as described in the ISTS Bases). The P-9 interlock blocks the affected RTS Turbine trip Functions below approximately 49% RTP. At power levels below P-9 the Turbine Trip RTS Functions are not required for reactor protection. The reactor may safely remain in operation with a turbine trip at lower power levels. The applicable BVPS safety analyses do not credit the RTS Functions that are blocked by P-9 when reactor power is below the P-9 interlock. The proposed change to limit the Applicability of the RTS Functions listed above to Mode 1 above the P-9 interlock is consistent with the BVPS design and safety analysis assumptions. As such, the proposed change is acceptable because it makes the RTS TS conform more closely to the BVPS design and safety analyses. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.7 *(Category 2 - Relaxation of Applicability)* The Applicability for CTS Function 23a, Intermediate Range Neutron Flux P-6 interlock, is specified as Mode 2 on CTS Table 3.3-1. The Applicability of the corresponding ISTS P-6 interlock Function 18a on Table 3.3.1-1 is Mode 2 below the P-6 interlock. The ITS Mode 2 Applicability for the P-6 interlock is annotated by footnote (g) which specifies the interlock Function is only required operable in Mode 2 at power levels below the P-6 interlock. The CTS Applicability for the P-6 interlock is revised to conform to the ISTS Applicability. This changes the CTS by eliminating any requirements for the P-6 interlock to be operable in Mode 2 at power levels above the P-6 interlock setpoint.

The P-6 interlock is part of the standard Westinghouse plant RTS design. The BVPS Allowable value for this Function is approximately $9.0 \times 10^{-11}$ Amps power. The interlock provides one critical function that is related to the assumptions of the safety analyses for the RTS instrumentation. On decreasing power, the P-6 interlock enables the RTS Source Range Neutron Flux Trip. The operability of the Source Range Neutron Flux reactor trip is credited in the applicable safety analyses at power levels below the P-6 interlock. As such the automatic P-6 function that enables the Source Range Trip below the P-6 interlock is specifically required operable in the ISTS. This is accomplished by specifying the Applicability for this RTS Function as power levels in Mode 2 below the P-6 interlock. The proposed change is acceptable for BVPS because the BVPS design conforms to the standard Westinghouse Plant design described in the ISTS bases for the P-6 interlock and because the BVPS safety analyses also assume the Source Range RTS Function is operable below the P-6 interlock. As such, the proposed change conforms more closely to the BVPS design and safety analyses as well as conforming to the ISTS. The proposed change is designated less restrictive because less stringent requirements for the P-6 RTS Function will be applicable in the ITS than in the CTS.

L.8 *(Category 4 - Relaxation of Required Action & Category 3 - Relaxation of Completion Time)* CTS Action 12, applicable to the manual reactor trip RTS Function, states " With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours and/or open the reactor trip breakers." The CTS Action is applicable in Modes 1 through 5. The corresponding ISTS utilizes two Action Conditions for the manual reactor trip function. ISTS Condition B, applicable in Modes 1 and 2, only requires that the plant be placed in Mode 3 in 48 hours. Once in Mode 3, ISTS Condition C would become applicable which allows 48 hours to restore the inoperable RTS Function or initiate Action to fully insert all rods and place the rod control system in a condition incapable of rod withdrawal in the following hour. The single CTS Action is revised to conform to the ISTS dual Action requirements for this RTS Function. This changes the CTS by eliminating the requirement to open the reactor trip breakers in 48 hours from CTS Action 12 and allowing an additional 48 hours once in Mode 3 to repair the inoperable manual trip channel before requiring that all rods be fully inserted and the rod control system rendered incapable of rod withdrawal.

The proposed change revises the CTS Action requirement for the manual reactor trip such that more time (48 hours) is allowed in Mode 3 to effect repairs before all the rods must be fully inserted and the rod control system rendered incapable of rod withdrawal. The proposed change is acceptable because there are two channels of manual reactor trip and one channel remains available to accomplish a reactor trip if necessary. In addition, the additional 48 hours apply only after the plant is shutdown in Mode 3. In this condition, the likelihood of an event occurring that would require a manual reactor trip is low and given the relatively short duration allowed to operate with the single remaining operable channel the proposed change does not adversely affect the safe operation of the plant. The proposed change is also acceptable considering that the required automatic reactor trips are available to mitigate events and protect the core. As such the additional time allowed by the revised Actions do not introduce unacceptable risk or a condition that adversely affects the safe operation of the plant. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.9 *(Category 4 - Relaxation of Required Action)* CTS Action 39, applicable to the reactor trip breaker and automatic trip logic RTS Functions in Modes 3, 4, and 5, states in part "restore the inoperable channel to OPERABLE status within 48 hours or open the reactor trip breakers within the next hour." The corresponding ISTS Action C requires that the inoperable channel be restored to operable status in 48 hours or initiate action to fully insert all rods and within the following hour (49 hours) place the rod control system in a condition incapable of rod withdrawal. The CTS Action is revised to conform to the ISTS Action. This changes the CTS by allowing an alternate means (other than open the reactor trip beakers) to be used to ensure the rods can not be withdrawn.

The purpose of the CTS Action to open the reactor trip breakers is to assure the rods are maintained fully inserted and to reduce the potential for a reactivity event when an RTS Function is degraded. The proposed change is acceptable because it accomplishes the same purpose as the CTS Action within the same total time. The ISTS Action requires that the rod control system be placed in a condition where it is incapable of rod withdrawal. The ISTS Action provides an equivalent level of assurance that the rods are maintained fully inserted and that the potential for a reactivity event is minimized. The CTS Action to open the reactor trip breakers is intended to prevent rod withdrawal. The ISTS Action accomplishes the same thing by placing the rod control system in a condition where it is incapable of rod withdrawal. The ISTS Action may consist of opening the trip breakers or other Action to defeat the rod control system. In addition to accomplishing the intent of the CTS Action, the proposed change also conforms more closely to the revised Applicability for the affected RTS Functions. The ISTS Applicability for the reactor trip breakers and automatic trip logic in Modes 3, 4, and 5 is "With the rod control system capable of rod withdrawal or one or more rods not fully inserted." The revised CTS Actions correspond to the ISTS Mode of Applicability for these RTS Functions and ensure the plant is removed from the Applicable Mode if the restoration Action is not met. As such, the revised CTS Actions do not introduce unacceptable risk or a condition that adversely affects the safe operation of the plant. The proposed change is designated less restrictive because less stringent requirements for the reactor trip breaker and automatic trip logic RTS Functions are applicable in the ITS than the CTS.

L.10 *(Category 4- Relaxation of Required Action)* CTS action 2.a.1 states "place the inoperable channel in trip within 6 hours and reduce THERMAL POWER to less than or equal to 75 percent RATED THERMAL POWER within the next 6 hours and perform SR 4.2.4,. " This CTS Action is addressing the Power Range Neutron Flux High RTS channels. The corresponding ISTS Required Actions associated with Condition D only require that the channel be placed in trip in 6 hours and that power be reduced to ≤ 75% RTP in the following 6 hours. The ISTS Actions do not specify the performance of any surveillance when power has been reduced to ≤ 75% RTP. The ISTS only specifies the performance of a surveillance if the power has not been reduced. The CTS Action 2 is revised to be consistent with the corresponding ISTS Action Condition D. This changes the CTS by eliminating the Action reference to perform SR 4.2.4.

The purpose of performing SR 4.2.4 as part of a Power Range channel Action requirement is to confirm (on a more frequent bases) that the Quadrant Power Tilt Ratio (QPTR) remains within the limit when a power range channel (which provides input to QPTR) is inoperable. However, consistent with the normal QPTR surveillance requirements, when power is ≤ 75% RTP more frequent surveillances (every 12 hours) are unnecessary and QPTR may be determined using only 3 power range channels for input on the normal frequency of every 7 days. This is the normal QPTR surveillance requirement and does not have to be repeated within an RTS Action in order to be performed within the specified frequency. As stated in the ISTS Bases for the Action requirement to reduce power to ≤ 75% RTP, "Reducing the power level prevents operation of the core with radial power distributions beyond the design limits." As such, verification of QPTR every 12 hours is unnecessary. Considering the effect of reducing power on the radial power distribution and that the normal QPTR surveillance may be performed using 3 power range channels at reduced power, the elimination of the requirement to perform SR 4.2.4 (QPTR verification) from CTS Action 2.a.1 is acceptable and does not adversely impact the safe operation of the plant. The proposed change is designated less restrictive because less stringent requirements for an inoperable Power Range Neutron Flux High channel are applicable in the ITS than the CTS.

L.11 *(Category 4- Relaxation of Required Action)* CTS Action 3, for the Intermediate Range (IR) Neutron Flux channels states: "With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. Below P-6, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 setpoint.

b. Above P-6 but below 5 percent of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5 percent of RATED THERMAL POWER.

c. Above 5 percent of RATED THERMAL POWER, POWER OPERATION may continue.

The corresponding ISTS Action Conditions F and G specify the following Actions:

Condition F for a single inoperable channel requires that power be reduced below P-6 or increased above P-10 in 24 hours.

Condition G for two inoperable channels requires that operations involving positive reactivity additions be suspended immediately and that power be reduced to below P-6 in two hours. The Actions for Condition G are modified by a Note that allows limited plant cooldown or boron dilution provided the change is accounted for in the Shutdown Margin (SDM).

The CTS Actions are revised to conform to the ISTS Action Conditions F and G. This changes the CTS by 1) eliminating Action requirements for the IR channels below the P-6 interlock, 2) allowing the option to increase power above the P-10 interlock instead of holding power between P-6 and 5% RTP until the inoperable Channel is repaired, and 3) providing Actions for two inoperable IR channels.

Consistent with the standard Westinghouse safety analyses, as explained in the ISTS bases, at power levels below the P-6 interlock the Source Range (SR) neutron flux trip provides the core protection for reactivity accidents. The IR RTS Trip Function is not credited by any safety analyses for providing a protection function at power levels below the P-6 interlock. As such the ISTS Applicability does not require the IR RTS Trip Function to be operable at power levels below the P-6 interlock. The CTS Applicability for the IR RTS Function is revised consistent with the ISTS. Therefore, the deletion of CTS Actions for the IR RTS Function below the P-6 interlock is acceptable and consistent with the Applicability requirements and safety analyses associated with the IR RTS Function.

Similarly above the P-10 interlock (approximately 10% RTP) the Power Range Neutron Flux channels perform the protection functions for the RTS. At power levels above the P-10 interlock the Power Range Neutron Flux RTS Function is credited by the safety analyses for reactor protection. The TS applicability does not require the IR RTS Function operable above the P-10 interlock. Therefore, the allowance to increase power to above the P-10 interlock when one IR channel is inoperable is acceptable because there is one remaining IR channel operable to provide monitoring functions and increasing power > P-10 places the plant in a safe condition where the Power Range Neutron Flux RTS Function is capable of providing the required protection function and core monitoring.

The ISTS Actions that allow for two IR channels to be inoperable are based on the fact that the IR RTS Function is not credited by the safety analyses for reactor protection. As explained in the ISTS Bases for the IR Function, the IR RTS Function is redundant to the SR RTS Function. But, only the SR RTS Function is credited by the safety analyses. The IR channels do provide a monitoring function between P-6 and P-10. Therefore, the proposed ISTS Actions to suspend positive reactivity additions and reduce power to below the P-6 interlock are acceptable because; 1) the ISTS Actions provide assurance that no significant (not accounted for by the SDM calculation) reactivity changes take place when the IR channels are unavailable for monitoring core reactivity and, 2) the Actions assure the plant is placed in an operating condition where the SR RTS Function is able to provide the required reactor protection and monitoring functions and the IR channels are not required operable.

The proposed changes are designated less restrictive because less stringent Actions will be applied in the ITS than in the CTS.

L.12 *(Category 4- Relaxation of Required Action)* CTS Action statement 4a for the Source Range RTS Function states "MODE 2 (Below P-6); with one source range neutron flux channel inoperable, immediately suspend operations involving positive reactivity additions." The corresponding ISTS Action Condition H contains the same requirements as CTS Action 4a to suspend positive reactivity additions immediately but the ISTS Condition is modified by a Note that states "Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated [Shutdown Margin] SDM." The CTS Action is revised to conform to the ISTS Condition. This changes the CTS by allowing limited plant cooldown or boron dilution to take place while in an Action that requires suspension of positive reactivity additions.

Limiting positive reactivity additions provides assurance that the SDM assumed in the safety analyses is maintained. The action to limit positive reactivity additions becomes necessary when the ability to monitor or protect the core is degraded. The proposed change is acceptable because the change continues to assure the required SDM is maintained. The calculated SDM preserves the assumptions of safety analyses i.e., that enough negative reactivity is available to shutdown and or maintain the reactor in a shutdown condition. The proposed change would allow some positive reactivity additions (cooldown) or boron dilution (makeup) that may permit placing the plant in a safer (further shutdown) condition. However, the proposed change limits the additions of positive reactivity to ensure that the required SDM is maintained. Thus, the proposed change continues to ensure the plant is operated in accordance with the applicable safety analyses assumptions regarding SDM while allowing some operating flexibility to place the plant in a safer condition. The proposed change is designated less restrictive as some cooldown or dilution would be allowed in the ITS that is not permitted in the CTS.

L.13 *(Category 4- Relaxation of Required Action)* CTS Action statement 4b for the Source Range RTS Function states "MODE 3, 4 and 5; with one source range neutron flux channel inoperable, restore the inoperable channel to OPERABLE status within 48 hours or open the reactor trip breakers within the next hour." The corresponding ISTS Action Condition J requires that with one source range neutron flux channel inoperable, the inoperable channel be restored to OPERABLE status within 48 hours or initiate action to fully insert all rods and place the rod control system in a condition incapable of rod withdrawal in the next hour (49 hours). The CTS is revised to conform to the ISTS Action Condition. This changes the CTS by allowing an alternate means, in lieu of opening the reactor trip breakers, to be used to maintain all the rods fully inserted.

The purpose of the CTS Action to open the reactor trip breakers is to assure the rods are maintained fully inserted and to reduce the potential for a reactivity event when the Source Range RTS Function is degraded. The proposed change is acceptable because it accomplishes the same purpose as the CTS Action within the same total time. The ISTS Action requires that the rod control system be placed in a condition where it is incapable of rod withdrawal. The ISTS Action provides an equivalent level of assurance that the rods are maintained fully inserted and that the potential for a reactivity event is minimized. In addition to accomplishing the intent of the CTS Action, the proposed change also conforms more closely to the revised Applicability for the affected RTS Functions. As such, the revised CTS Action corresponds to the ISTS Mode of Applicability for the affected RTS Function and ensures the plant is removed from the Applicable Mode if the restoration Action is not met. Therefore, the revised CTS Actions do not introduce unacceptable risk or a condition that adversely affects the safe operation of the plant. The proposed change is designated less restrictive because less stringent Actions will be applied in the ITS than in the CTS.

L.14 *(Category 4- Relaxation of Required Action)* CTS Action 8 applicable to the turbine trip (stop valve closure) RTS Function states; "With the number of OPERABLE channels one less than the Total Number of Channels and with the THERMAL POWER level above P-9, place the inoperable channel in the tripped condition within 6 hours; operation may continue until performance of the next required CHANNEL FUNCTIONAL TEST." The corresponding ITS Action Condition L for the turbine trip RTS Functions also requires the inoperable channel be placed in the tripped condition. However, the ISTS Condition does not contain a limitation on operation until the performance of the next required Channel Functional Test. In addition, the ITS Condition contains the allowance to bypass an inoperable channel to allow testing of the other channels. The CTS Action 8 is revised to conform to the ITS Action Condition L. This changes the CTS Action by eliminating the provision that operation is limited to the performance of the Channel Functional Test and adding the provision that an inoperable channel may be bypassed for surveillance testing of other channels.

As described in the ISTS and CTS bases, the Turbine trip RTS Functions are not credited as a primary reactor trip in the safety analyses for core protection. The turbine trip RTS Functions are anticipatory trips that help to minimize the RCS transient resulting from a loss of load. Core protection for a loss of load accident is provided by the credited Pressurizer Pressure - High Trip Function.

The elimination of the provision that limits operation until the next Channel Functional Test is acceptable because with one inoperable channel placed in trip the affected channel is performing its safety function and the RTS turbine trip Function continues to be operable and available to provide its design protection function. In addition, the next required performance of a channel functional test is during the next startup and may be as much as 18 months from when the channel becomes inoperable. The basis for the CTS provision that operation may continue until the next channel functional test or the next startup is that the adjustment and calibration of the turbine trip (stop valve closure) RTS Function would require that the turbine stop valve be closed to adjust the associated limit switches. Therefore the necessary repairs to restore the channel to operable status may need to be accomplished during shutdown conditions. Thus, the CTS note provides maintenance guidance for the restoration of the inoperable channel. This type of detailed guidance is not required in the TS to assure the safe operation of the plant. In accordance with 10CFR 50.65 the performance of safety systems such as the RTS must be monitored and controlled such that the system is maintained capable of performing its intended safety function. The Maintenance Rule requirements provide additional assurance that safety systems are maintained operable. Therefore, considering the additional requirements governing the proper maintenance of safety related equipment such as the RTS, the proposed change to eliminate specific maintenance requirements from the RTS TS is acceptable.

The addition of the ISTS allowance to bypass an inoperable channel for a limited time to allow surveillance testing of another channel is acceptable because the time that the channel is bypassed is limited to 4 hours and the fact that the other turbine trip RTS Function (low oil pressure) is diverse to the stop valve closure trip and would provide the required reactor trip on turbine trip. Only one of the two turbine trips need function in order to provide a reactor trip on turbine trip. The allowance to bypass a single channel of the turbine stop valve closure trip for up to 4 hours reduces the potential for an inadvertent reactor trip and allows the operation of another channel to be verified more safely. As such, the allowance to bypass an inoperable channel is acceptable.

The proposed changes are designated less restrictive because less stringent Actions will be applied in the ITS than in the CTS.

L.15 *(Category 4- Relaxation of Required Action)* CTS Action 11 specifies that the inoperable channel be placed in the trip condition. The corresponding ITS Action Condition K also requires the inoperable channel to be placed in the trip condition. However, the ITS Condition K includes a Note with the provision that the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. The CTS Action is revised to conform with the ITS Action. This changes the CTS by allowing an inoperable channel to be bypassed to facilitate surveillance testing of the other channels.

CTS Action statement 11 applies to the RCP breaker position trip RTS function and is applicable when one channel is inoperable. The allowance to bypass an inoperable channel for up to 4 hours is currently applicable to most RTS functions. The addition of this allowance for the RCP breaker trip RTS Function is reasonable considering that this Function is only one of 4 diverse RTS functions for initiating a reactor trip on low RCS flow. In addition, the RCP breaker position trip Function is similar to the diverse RCP bus undervoltage and underfrequency trip Functions, i.e., it is an anticipatory trip. The actual RCS flow provides yet another trip function which is not anticipatory and is based on the measured RCS flow. The actual RCS Flow Trip Function is the RTS Function that is credited in the safety analyses for the low RCS flow condition. The allowance to bypass a single channel of the RCP breaker position trip Function for up to 4 hours reduces the potential for an inadvertent reactor trip and allows the operation of another channel to be verified more safely. Therefore, the addition of the ISTS allowance to bypass an inoperable channel is acceptable based on the number of diverse functions providing low flow protection, the relatively brief period of time the channel is allowed to be bypassed, and the low likelihood of an event occurring within this time that would require this particular low flow trip to have all channels operable. The proposed change is designated less restrictive because less stringent Actions will be applied in the ITS than in the CTS.

L.16 *(Category 3- Relaxation of Completion Time)* CTS Action 40b contains the requirements for an inoperable reactor trip breakers (RTBs). This CTS Action address RTBs that are inoperable for reasons other than a diverse trip feature. The CTS Action requires that the plant be placed in Mode 3 within 6 hours. The CTS Action does not allow any time for restoration. The corresponding ISTS Condition N applicable to the RTBs contains a 1-hour restoration time before requiring the plant to be placed in Mode 3. The CTS is revised to conform to the ISTS. This changes the CTS by allowing 1 hour to repair an inoperable RTB before requiring that a shutdown to Mode 3 begin.

The 1 hour allowance provided by the ISTS Action Condition N is sufficient to correct minor problems before requiring the plant to undergo a shutdown transient and is sufficiently short to ensure prompt action with a negligible impact on safety. The additional hour provided by the ISTS for restoring an inoperable RTB is acceptable because the remaining operable RTB can provide the required safety function and because of the low likelihood of an event occurring during this brief time that would require both the RTBs operable. In addition, the additional hour provided by the ISTS is consistent with the total time allowed by Specification 3.0.3

to reach Mode 3 for other situations of comparable or greater safety significance (e.g., a total loss of a safety function). As such, the CTS Action, which is applicable when one RTB is still operable and capable of performing the required safety function, is overly restrictive. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.17 *(Category 4- Relaxation of Required Action)* Unit 1 only (Unit 2 does not apply Action 3 to the P-6 Interlock). CTS Action 3, for the P-6 RTS Interlock states: "With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. Below P-6, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 setpoint.

b. Above P-6 but below 5 percent of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5 percent of RATED THERMAL POWER.

c. Above 5 percent of RATED THERMAL POWER, POWER OPERATION may continue.

The corresponding ITS Action Condition O for the P-6 Interlock specifies the following Actions when one or more required channels are inoperable:

> Verify the interlock is in the required state for existing unit conditions within 1 hour or be in Mode 3 in 7 hours.

The CTS Action is revised to conform to the ITS Action Condition O. This changes the CTS by providing a simple action to verify the interlock status, which can be done by visual observation of panel status lights, and eliminating requirements for restoring channels to operable status or restricting power increases.

The safety significant function of the P-6 RTS interlock is to enable (energize) the Source Range (SR) neutron flux detectors when decreasing power. On increasing power, the P-6 interlock allows the source range detectors to be manually de-energized in preparation for further power ascension. The SR RTS Function is required operable below P-6. Consistent with the standard Westinghouse safety analyses, as explained in the ISTS bases, at power levels below the P-6 interlock, the SR RTS trip Function provides the required core protection.

The ITS Action for an inoperable interlock channel requires that the interlock status be promptly verified in the correct state for plant conditions or the plant be placed in Mode 3 in the following 6 hours. The proposed change to adopt the ISTS Action is acceptable because the Action provides prompt assurance that the affected RTS Function (SR neutron flux trip) is available when required to provide core protection. If the interlock can not be verified in the correct state within 1 hour Action must be initiated to place the plant in Mode 3. In addition, if the required SR instrument channels are not operable below P-6, the ITS Actions for the SR RTS Function provide the appropriate remedial measures to assure the safe operation of the plant. As such, the proposed change provides adequate assurance that the plant continues to be operated consistent with the assumptions of the applicable safety analyses. The proposed change is designated less restrictive because less stringent Actions will be applied in the ITS than in the CTS.

L.18 *(Category 4- Relaxation of Required Action)* Unit 1 only (Unit 2 does not apply Action 12 to the RTS interlocks). CTS Action 12, applicable to the Unit 1 P-8, P-9, P-10, and P-13 RTS Interlocks states:

> With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours and/or open the reactor trip breakers

The corresponding ITS Action Condition O and P for the RTS Interlocks specifies the following Actions when one or more required channels are inoperable:

> Verify the interlock is in the required state for existing unit conditions within 1 hour or
>
> ITS Condition O specifies be in Mode 3 in 7 hours and ITS Condition P specifies be in Mode 2 in 7 hours.

ITS Condition O is applicable to those RTS Functions required operable in Modes 1 and 2 and ITS Condition P is applicable to those RTS Functions required operable in Mode 1.

The CTS Action is revised to conform to the ITS Action Condition O. This changes the CTS by providing a simple action to verify the interlock status, which can be done by visual observation of panel status lights, and eliminating requirements for restoring channels to operable status or opening the reactor trip breakers.

The safety significant function of the RTS interlocks is to enable the required RTS trip functions on increasing or decreasing power. A secondary function of some interlocks will allow certain RTS Functions to be bypassed at specific power levels. The RTS Functions that are enabled by the interlocks are addresses separately in ITS Table 3.3.1-1 and have appropriate Actions assigned to them if they are not operable when required. The ITS requirement regarding the RTS interlocks, therefore, focuses on verifying the affected interlock is in the required state for the current plant conditions (i.e., it is performing its safety function). If certain RTS Functions are not enabled when required the applicable ITS Actions for those specific Functions contain the appropriate measures to ensure the safe operation of the plant.

The ITS Actions for an inoperable interlock channel requires that the interlock status be promptly verified in the correct state for plant conditions or the plant be placed in Mode 2 or 3 (depending on the affected interlock) in the following 6 hours. The proposed change to adopt the ISTS Action is acceptable because the Action provides prompt assurance that the affected RTS Function(s) are available when required to provide core protection. If the interlock can not be verified in the correct state within 1 hour Action must be initiated to place the plant in Mode 2 or 3 as applicable. In addition, if the required RTS Function(s) enabled by the interlock are not operable, the ITS Actions for those RTS Function(s) provide the appropriate remedial measures to assure the safe operation of the plant. As such, the proposed change provides adequate assurance that the plant continues to be operated consistent with the assumptions of the applicable safety analyses. The proposed change is designated less restrictive because less stringent Actions will be applied in the ITS than in the CTS.

L.19 *(Category 2- Relaxation of Applicability)* CTS Table 4.3-1 specifies the surveillance requirements for the RTS Functions. As part of the surveillance requirements, CTS Table 4.3-1 specifies the required modes for performing the surveillances. In the case of the Intermediate Range RTS Function, CTS Table 4.3-1 specifies Mode 1 for performing surveillances. The corresponding ISTS requirements for the RTS Function do not include a separate Table for surveillance requirements. All the requirements associated with an RTS Function are presented in ISTS Table 3.3.1-1. In addition the ISTS, does not require the Intermediate Range RTS Function to be operable above P-10 (approximately 10% RTP). CTS Table 3.3-1 which also contains Applicable Modes for the RTS Function specifies the Intermediate Range Function may be bypassed above P-10. The CTS applicable Mode specified in Table 4.3-1 for the Intermediate Range RTS Function is revised to conform to the ISTS and to be more consistent with the Mode specified on CTS Table 3.3-1. This changes the CTS by combining the requirements for the RTS Functions into a single Table and relaxing the current Mode 1 requirement for performing surveillances by the addition of Footnote (b) to Mode 1 which identifies that the Function is only required in Mode 1 below P-10.

The purpose for the Intermediate Range RTS Function is to provide core protection during startup and low power operation (< 10 % RTP). Due to the low setpoint of this RTS Function (approximately 25% RTP), the Intermediate Range RTS Function must be bypassed to allow normal power accession to proceed. The RTS is designed to allow the Intermediate Range RTS Function to be bypassed at approximately 10% RTP (via the P-10 Interlock). As such, the safety analyses do not credit this trip at power levels above 10% RTP and the ISTS clearly specifies the Function is not required above P-10. The proposed change is acceptable because it revises the Intermediate Range Applicability to more closely conform to the RTS design. In addition, the proposed change does not reduce the availability of this RTS Function or invalidate any assumptions of the applicable safety analyses. The Intermediate Range RTS Function continues to be maintained operable consistent with the design of the RTS to provide core protection during startup and low power operation. In addition, the proposed change removes inconsistencies in the CTS requirements for this Function in Table 3.3-1 and Table 4.3-1. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.20 *(Category 2- Relaxation of Applicability)* CTS Table 4.3-1 specifies the surveillance requirements for the RTS Functions. As part of the surveillance requirements, CTS Table 4.3-1 specifies the required modes for performing the surveillances. In the case of the Source Range RTS Function, CTS Table 4.3-1 specifies Mode 2 for performing surveillances. The corresponding ISTS requirements for the RTS Function do not include a separate Table for surveillance requirements. All the requirements associated with an RTS Function are presented in ISTS Table 3.3.1-1. In addition the ISTS, does not require the Source Range RTS Function to be operable above P-6 (approximately $9 \times 10^{-11}$ amps). CTS Table 3.3-1 which also contains Applicable Modes for the RTS Function specifies the source Range Function may be bypassed above P-6. The CTS applicable Mode specified in Table 4.3-1 for the Source Range RTS Function is revised to conform to the ISTS and to be more consistent with the Mode specified on CTS Table 3.3-1. This changes the CTS by combining the requirements for the RTS Functions into a single Table and relaxing the current Mode 2 requirement for performing surveillances by the addition of Footnote (d) to Mode 2 which identifies that the Function is only required in Mode 2 below P-6.

The purpose for the Source Range RTS Function is to provide core protection during shutdown conditions when the rod control system is capable of rod withdrawal, during startup and low power operation (< P-6). Due to the low setpoint of this RTS Function (approximately 1 X $10^5$ cps), the Source Range RTS Function must be bypassed to allow normal power ascension to proceed. The RTS is designed to allow the Source Range RTS Function to be bypassed via the P-6 Interlock. As such, the safety analyses do not credit this trip at power levels above the P-6 interlock and the ISTS clearly specifies that the Function is not required above P-6. The proposed change is acceptable because it revises the Source Range Applicability to more closely conform to the RTS design and the applicable safety analyses assumptions. The proposed change does not reduce the availability of this RTS Function or invalidate any assumptions of the applicable safety analyses. The Source Range RTS Function continues to be maintained operable consistent with the design of the RTS to provide core protection during shutdown conditions when the rod control system is capable of rod withdrawal, during startup and low power operation. In addition, the proposed change removes inconsistencies in the CTS requirements for this Function in Table 3.3-1 and Table 4.3-1. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.21 *(Category 2- Relaxation of Applicability)* CTS Table 4.3-1 specifies the surveillance requirements for the RTS Functions. As part of the surveillance requirements, CTS Table 4.3-1 specifies the required modes for performing the surveillances. In the case of the Turbine Trip RTS Function, CTS Table 4.3-1 specifies Mode 2 for performing surveillances. The corresponding ISTS requirements for the RTS Function do not include a separate Table for surveillance requirements. All the requirements associated with an RTS Function are presented in ISTS Table 3.3.1-1. In addition the ISTS, does not require the Turbine Trip RTS Function to be operable below P-9 (49% RTP). In addition, CTS Table 3.3-1 only specifies Mode 1 for this RTS Function. The CTS applicable Mode specified in Table 4.3-1 for the Turbine Trip RTS Function is revised to conform to the ISTS and to be more consistent with the "Above P-9" permissive noted in the Function title on Tables 3.3-1 and 4.3-1. This changes the CTS by combining the requirements for the RTS Functions into a single Table and deleting the current Mode 2 requirement for performing surveillances. Changes to the Mode 1 requirement for this RTS Function were addressed in the markups of Table 3.3-1 and are applicable to Table 4.3-1.

The purpose for the Turbine Trip RTS Function is to provide an anticipatory loss of load reactor trip above P-9 (49% RTP). This Function serves to minimize the resulting RCS transient from a loss of load. Below 49% RTP a reactor trip on turbine trip is not required as the transient is not as severe. The RTS is designed to enable the Turbine Trip RTS Function at 49% RTP by the P-9 Interlock. As such, the safety analyses can not credit this trip at power levels below the P-9 interlock and the ISTS clearly specifies that the Function is not required below P-9. The proposed change is acceptable because it revises the Turbine Trip Applicability to more closely conform to the RTS design and the applicable safety analyses assumptions. The proposed change does not reduce the availability of this RTS Function or invalidate any assumptions of the applicable safety analyses. The Turbine Trip RTS Function continues to be maintained operable consistent with the design of the RTS to minimize the loss of load RCS transient at power levels greater than 49% RTP. In addition, the proposed change removes inconsistencies in the CTS requirements for this Function in Table

3.3-1 and Table 4.3-1. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.22 *(Category 2- Relaxation of Applicability)* CTS Table 4.3-1 specifies the surveillance requirements for the RTS Functions. As part of the surveillance requirements, CTS Table 4.3-1 specifies the required modes for performing the surveillances. In the case of the P-6 RTS Function, CTS Table 4.3-1 specifies Mode 1 for performing surveillances. The corresponding ISTS requirements for the RTS Function do not include a separate Table for surveillance requirements. All the requirements associated with an RTS Function are presented in ISTS Table 3.3.1-1. In addition the ISTS, does not require the P-6 RTS Function to be operable above the P-6 setpoint (approximately $9 \times 10^{-11}$ amps). CTS Table 3.3-1 which also contains Applicable Modes for the RTS Function only specifies that the P-6 Function be operable in Mode 2. The CTS applicable Mode specified in Table 4.3-1 for the P-6 RTS Function is revised to conform to the ISTS and to be more consistent with the Mode specified in CTS Table 3.3-1. This changes the CTS by combining the requirements for the RTS Functions into a single Table and deleting the current Mode 1 requirement for performing surveillances. The changes to the Mode 2 requirement for the P-6 Functions are identified and discussed in the changes to CTS Table 3.3-1. The changes made to this Function in Table 3.3-1 are applicable to Table 4.3-1.

The safety significant purpose of the P-6 RTS Function is to enable the Source Range RTS Function to provide core protection during shutdown conditions when the rod control system is capable of rod withdrawal, during startup and low power operation (< P-6). Due to the low setpoint of this RTS Function (approximately $1 \times 10^5$ cps), the Source Range RTS Function must be bypassed to allow normal power ascension to proceed. The RTS is designed to allow the Source Range RTS Function to be bypassed at power levels greater than the P-6 Interlock. As such, the safety analyses do not credit the Source Range trip or the operation of the P-6 interlock at power levels above the P-6 interlock setpoint. As such, the ISTS clearly specifies that the P-6 interlock Function is not required at power levels above the P-6 setpoint.

The proposed change is acceptable because it revises the P-6 Interlock Applicability to more closely conform to the RTS design and the applicable safety analyses assumptions. The proposed change does not reduce the availability of this RTS Function or invalidate any assumptions of the applicable safety analyses. The P-6 interlock continues to be maintained operable to ensure the Source Range RTS Function is available consistent with the assumptions of the safety analyses and design of the RTS. In addition, the proposed change removes inconsistencies in the CTS requirements for this Function in Table 3.3-1 and Table 4.3-1. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.23 *(Category 7- Relaxation of Surveillance Frequency)* CTS Table 4.3-1 specifies a Channel Functional Test (CFT) be performed on the Manual Reactor Trip Function prior to each startup, if not performed in the previous 31 days (Note 1) and once per Refueling Cycle. The corresponding ISTS requirement specifies that a TADOT be performed on this RTS Function once every 18 months. The ISTS surveillance requirement is modified by a note specifying verification of the setpoint is not required. The CTS surveillance requirements for the Manual Reactor Trip RTS Function are revised to conform to the ISTS. This changes the CTS by eliminating the requirement to perform a CFT on the Manual Reactor Trip Function prior to each startup if not performed within 31 days (Note 1).

The TADOT is an ISTS defined test (ISTS Section 1.0) that is one of the surveillances used to replace the CTS CFT surveillance. The introduction of the different ISTS surveillance tests and the differences from the CTS surveillances are identified and discussed in the markups and DOCs associated with Section 1.0. The ISTS TADOT surveillance for the Manual Reactor Trip Function replaces the CTS CFT required at refueling intervals without introducing a technical change to that CTS requirement. However, the ISTS surveillance requirements for this function eliminate the CTS requirement to perform a CFT prior to each startup. The ISTS requirement reduces the frequency of the required testing but does not change the method or the type of testing required.

The elimination of the requirement to re-perform the CFT prior to each startup is acceptable based on the remaining requirement to perform this testing every 18 months which provides adequate assurance of operability. Testing this manual RTS Function once per 18 months is reasonable considering the known reliability and simplicity of manually actuated (hand switch) circuits and the other more frequent testing that is performed on RTS circuits including the RTBs and automatic trip logic testing. In addition, the elimination of this surveillance requirement reduces the number of RTB and bypass breaker cycles (wear) which generally improves equipment reliability and availability. As such, the proposed change will not adversely affect the safe operation of the plant and continues to assure adequate equipment testing is performed to verify the operability of the Manual Reactor Trip. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.24 *(Category 7- Relaxation of Surveillance Frequency)* The CTS surveillances for the Power Range Low setpoint and Intermediate Range RTS Functions specified in Table 4.3-1 require a Channel Functional Test (CFT) to be performed Prior to Startup (S/U) if not performed in the previous 31 days (Note 1). The corresponding ISTS surveillance SR 3.3.1.8 (BVPS ITS SR 3.3.1.7) also requires a Channel Operational Test (COT) prior to reactor startup. However, the ISTS Surveillance is modified by a Note that states the surveillance is only required if it has not been performed in the previous 92 days. The ISTS surveillance also requires the performance of the COT after reducing power below P-10 and every 92 days on a periodic basis as long as the plant is maintained in the Applicable Mode. The CTS surveillance requirements for these RTS Functions are revised to conform to the ISTS. This changes the CTS requirement to perform the surveillance prior to reactor startup such that the performance of the surveillance need not be repeated if it was performed within the previous 92 days instead of the previous 31 days. In addition, the requirement to perform the surveillance during a shutdown after reducing power below P-10 and the requirement to repeat the surveillance every 92 days on a periodic basis are added to the CTS. The additional performance requirements are addressed separately in an M DOC. This DOC only addresses the change from 31 to 92 days prior to startup.

The purpose of the surveillance is to verify the neutron flux trip setpoints are operable during power ascension or shutdown (Mode 2 and Mode 1 < P-10) when the affected neutron flux trip functions are required operable to provide the core protection. The type of testing required remains unchanged, and any differences between the CTS CFT and the ISTS COT are discussed in the DOCs associated with ISTS Section 1.0, "Definitions". The proposed allowance (92 days) for performing this surveillance prior to reactor startup is acceptable because it is consistent with the required frequency for COTs performed on most of the RTS and ESFAS functions. The RTS and ESFAS functions with Quarterly COTs are considered operable between the required performances, including the power range neutron flux high trip setpoint channels during Mode 1 operation. The quarterly surveillance interval has proven to provide adequate assurance of continued operability for the majority of RTS and ESFAS Functions. The proposed change makes the surveillance interval for the affected RTS Functions more consistent with the other RTS and ESFAS Functions. The performance of the required COT within 31 days is overly conservative and unnecessary to ensure the operability of the affected instrumentation. The CTS is also revised to require additional performances of the COT during a shutdown, after reducing power below P-10, and every 92 days on a periodic basis as long as the plant is operated in the Applicable Mode (Mode 2 and Mode 1 < P-10). The inclusion of the requirements to perform this surveillance during shutdowns and every 92-days provide additional assurance that the affected RTS Functions are maintained operable when required. Considering the additional surveillance requirements and the acceptability of the 92-day interval for other RTS protection instrumentation, the 92-day interval for the performance of a COT prior to startup is adequate to confirm the operability of the affected RTS functions. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.25 *(Category 6- Relaxation of Surveillance Requirement Acceptance Criteria)* The CTS surveillances for the Under Voltage and Under Frequency RTS Functions specified in Table 4.3-1 require a quarterly Channel Functional Test (CFT). The corresponding ISTS surveillance requirements for these RTS Functions specify a quarterly Trip Actuating Device Operational Test (TADOT). The ISTS TADOT requirement is modified by a note that specifies that "verification of setpoint is not required". The CTS surveillance is revised to conform to the ISTS. This changes the CTS by adding a specific exception for setpoint verification when performing the quarterly functional test. The difference between the ISTS TADOT defined term and the CTS CFT defined term is addressed in the DOCs associated with TS Section 1.0, Definitions. This DOC is only intended to address the addition of the ISTS Note that takes exception to the verification of setpoints.

The affected RTS Functions (Under Voltage and Under Frequency on the RCP bus) are anticipatory loss of flow reactor trip functions that are not credited as primary reactor trips in the safety analyses. The actual RCS measured flow is the primary credited RTS Function for loss of flow. In addition, the instrumentation associated with these Functions consists of simple contacts operated by an electro-mechanical or digital relay that is not located where it is subject to an adverse environment. The associated instrument signal from the relay is not processed through complicated circuitry consisting of a variety of electronic components subject to age or environmental affects that may contribute to significant setpoint drift. In addition, setpoint verification requires removal of the associated relay which reduces the availability of the protection function, increases equipment wear, and introduces the potential for error by requiring repeated removal and installation of the equipment. It should also be noted that the addition of the proposed exception to the verification of setpoints is consistent with the requirements of the CTS CFT definition which does not require setpoint verification.

Based on the discussion above and the fact the operation of the affected relays and contacts continue to be tested every quarter and the setpoints continued to be verified periodically every 18 months by the required channel calibration, the proposed change is acceptable. The proposed change provides adequate assurance that the affected instrumentation is maintained operable and does not adversely affect the safe operation of the plant. The proposed change is designated less restrictive because the ITS requirement has a more explicit exception in the surveillance requirement than contained in the CTS.

L.26 *(Category 6 - Relaxation of Surveillance Requirement Acceptance Criteria and Category 7 - Relaxation of Surveillance Frequency)* The CTS surveillances for the Turbine Trip RTS Functions specified in Table 4.3-1 require a Channel Functional Test (CFT) performed prior to each startup. The CTS surveillance is modified by a note that specifies the surveillance is only required if not performed in the previous 31 days. The corresponding ISTS surveillance requirements for these RTS Functions specify a Trip Actuating Device Operational Test (TADOT) be performed prior to exceeding the P-9 interlock whenever the unit has been in Mode 3 if not performed in the previous 31 days. The ISTS TADOT requirement is modified by a note specifying "verification of setpoint is not required". The CTS surveillance is revised to conform to the ISTS. This changes the CTS by extending the frequency to perform the surveillance until the P-9 interlock (49% RTP) is reached instead of prior to startup and by adding a specific exception for setpoint verification when performing the functional test. The difference between the ISTS TADOT defined term and the CTS CFT defined term is addressed in the DOCs associated with TS Section 1.0, Definitions. This DOC is only intended to address the change extending the frequency for performing this surveillance up to the P-9 setpoint and the addition of the ISTS Note that takes exception to the verification of setpoint acceptance criteria.

The proposed change to extend the surveillance frequency from prior to startup until the P-9 interlock is acceptable because the affected RTS Turbine Trip Functions are not required operable until the P-9 interlock setpoint (49% RTP) is reached. Below the P-9 interlock setpoint the Turbine Trip Functions are not required operable because the RCS is capable of handling a turbine trip loss of load transient without the need for a reactor trip. As such, the Turbine Trip RTS Function surveillance requirements are not required to be complete until the P-9 interlock setpoint is reached. Upon reaching the P-9 setpoint, the Turbine Trip RTS Function must be verified operable and capable of performing its safety function for reactor protection. The proposed change continues to assure the operability of the Turbine Trip RTS Functions is verified prior to the Functions being required for reactor protection.

The Turbine Trip RTS Functions (low oil pressure and stop valve closure) are anticipatory loss of load reactor trip functions not credited in the safety analyses as a primary reactor trip. Pressurizer Pressure High is the credited (primary) RTS Function for loss of load. In addition, the instrumentation associated with these Functions consist of simple contacts operated by a pressure switch (low oil pressure) or limit switch (valve position) that operate in a two-out-of-three (oil pressure) or a four-out-of-four (stop valve position) logic to actuate a reactor trip. The instrument signal from the switches is not processed through complicated circuitry consisting of a variety of electronic components subject to age or environmental affects that may contribute to significant setpoint drift. It should also be noted that the addition of the proposed exception to the verification of setpoints is consistent with the requirements of the CTS CFT definition which does not require setpoint verification.

Based on the discussion above and the fact that the operation of the affected switches and contacts continue to be tested prior to exceeding P-9 after each shutdown to Mode 3 (if not tested in the last 31 days) and that the setpoints continued to be verified periodically every 18 months by the required Channel Calibration, the proposed change that takes exception to the verification of setpoints is acceptable.

As such, the proposed changes continue to provide adequate assurance that the affected instrumentation is maintained operable and do not adversely affect the safe operation of the plant. The proposed changes are designated less restrictive because less stringent surveillance requirements are applied in the ITS than in the CTS.

L.27 *(Category 7 - Relaxation of Surveillance Frequency)* The CTS surveillances for the RTB RTS Function specified in Table 4.3-1 require a Channel Functional Test (CFT) performed on each train every other month and prior to each startup if not performed in the previous 31 days (Note 1). The corresponding ISTS surveillance requirement for the RTB RTS Function (SR 3.3.1.4) only specifies a Trip Actuating Device Operational Test (TADOT) be performed every 31 days on a staggered Test Basis. The ISTS surveillance does not require an additional performance of the surveillance prior to each startup. The CTS is revised to conform to the ISTS. This changes the CTS by eliminating the requirement to perform the surveillance prior to each startup. The difference between the ISTS TADOT defined term and the CTS CFT defined term is addressed in the DOCs associated with TS Section 1.0, Definitions. This DOC is only intended to address the change that eliminates the requirement to perform the surveillance prior to each startup as modified by Table 4.3-1 Note 1.

The Mode of applicability for the RTBs is Mode 1, 2, and 3, 4, and 5 when the rod control system is capable of rod withdrawal. The rules of TS (Section 3.0) require that surveillances be met (performed within the required frequency) prior to entering the Mode of applicability and during the Mode of applicability. The rules of TS usage require that the affected RTB surveillance be met prior to placing the rod control system in a condition where rods may be withdrawn in Modes 3, 4, or 5. In addition, the surveillance must continue to be performed periodically on the specified interval while in this Mode of applicability. As the rod control system must be made capable of rod withdrawal prior to each reactor startup, the TS already require that the surveillance must be met prior to each reactor startup without the need for an additional requirement to specifically perform the surveillance "prior to each startup." Due to the essentially redundant requirements contained in the CTS, the proposed change eliminates a performance requirement but does not significantly reduce the required surveillance testing of the RTBs. The proposed change is acceptable because the remaining surveillance requirements continue to assure the RTBs are verified to be operable prior to each startup and on a periodic basis thereafter. In addition, the proposed change does not significantly reduce the required testing and continues to provide adequate assurance that the RTBs are maintained operable. The proposed change is designated less restrictive because less stringent surveillance requirements are applied in the ITS than in the CTS.

L.28 *(Category 7 - Relaxation of Surveillance Frequency)* The CTS surveillance requirements specified in Table 4.3-1 for the power range neutron flux high setpoint include a channel calibration performed every quarter. The surveillance is modified by a note that excludes the neutron detectors. The corresponding ISTS channel calibration requirement associated with the power range neutron flux high setpoint (SR 3.3.1.10) only requires the calibration to be performed every 18 months. The ISTS surveillance also contains a note that excludes the neutron detectors from the test. The CTS is revised to conform to the ISTS. This changes the CTS by reducing the frequency of the required channel calibration from quarterly to once per 18 months.

The existing surveillance requirements for the nuclear instrumentation system (NIS) include a daily adjustment by calorimetric heat balance calculation, a monthly adjustment to the incore detectors, and a quarterly channel functional test (CFT). The CTS CFT defined term in Section 1.0 of the TS does not require setpoints to be verified during performance of the test. The new ISTS channel operational test (COT) that replaces the CTS CFT explicitly requires that setpoints be verified. The COT is required to be performed every quarter on the NIS channels. Therefore, the channel setpoints are required to be verified on a quarterly basis. The significant difference between a channel calibration and a COT is that the channel calibration includes the instrument channel sensors. As the sensors (neutron detectors) are not included in the CTS quarterly channel calibration requirement, the new quarterly COT effectively accomplishes the same function as the CTS quarterly channel calibration requirement.

The proposed change is acceptable considering the number and frequency of surveillances that are performed on the NIS (daily, monthly, quarterly) and the fact that the new ISTS COT definition specifically requires setpoints to be verified every quarter. Considering that the new COT requirement is effectively the same as the CTS channel calibration requirement, the proposed change does not significantly reduce the surveillance testing performed on the NIS. In addition, the channel calibration requirement is normally required on an 18 month interval for all other RTS and ESFAS instrument channels and has been proven to provide adequate assurance of instrument operability when performed on this interval for all other RTS and ESFAS instrumentation. As such, the proposed change continues to provide adequate assurance that the NIS channels are appropriately calibrated and maintained operable consistent with the requirements for the other RTS and ESFAS instrument channels. The proposed change is designated less restrictive because less stringent surveillance requirements are applied in the ITS than in the CTS.

L.29 (*Category 7 - Relaxation of Surveillance Frequency)* Unit 1 only. Unit 1 Fuctional Unit # 24, "Reactor Trip Bypass Breakers" includes a surveillance requirement to perform a functional test on the bypass breakers prior to startup (S/U) if not performed in the previous 31 days (Note 1). The corresponding ITS surveillance requirement applicable to the reactor trip bypass breakers (SR 3.3.1.4) specifies that the bypass breakers be tested prior to placing the bypass breaker in service but does not include the requirement to test the bypass breakers prior to startup. This changes the CTS by reducing the number of bypass breaker surveillance tests required.

The proposed change is acceptable considering that the ITS surveillance requirement SR 3.3.1.4 continues to ensure the bypass breakers are tested prior to placing them in service. As such, the proposed change continues to provide adequate assurance that the bypass breakers are maintained operable and that the plant continues to be operated in a safe manner. The proposed change is designated less restrictive because less stringent surveillance requirements are applied in the ITS than in the CTS.

## *More Restrictive Changes (M)*

M.1 CTS Tables 3.3-1 and 4.3-1 list the RTS interlocks in Function 23. The CTS list of interlocks includes P-10 and P-13. The P-10 and P-13 interlocks function to provide the P-7 interlock (low power permissive). This is a standard Westinghouse RTS interlock design. Although the CTS references the P-7 permissive in several RTS Functions, the CTS does not specifically list the P-7 interlock in RTS Function 23. The CTS relies on specifying the components of the P-7 interlock (P-10 and P-13) to address the function of P-7. The ISTS list of interlocks includes P-10, P-13, and P-7. The CTS is revised to conform to the ISTS. This changes the CTS by adding a specific RTS line item Function for the P-7 interlock in Tables 3.3-1 and 4.3-1.

The proposed change is acceptable because it is necessary to conform to the ISTS and because the P-7 interlock is part of the BVPS RTS design. The inclusion of this interlock and associated requirements in CTS Tables 3.3-1 and 4.3-1 provides a more complete RTS specification that clearly addresses all the RTS interlocks consistent with the ISTS and BVPS design. Although the P-7 interlock may be addressed indirectly by the inclusion of the P-10 and P-13 interlocks, a separate line item for the P-7 interlock provides more clear guidance regarding the requirements for RTS operability and the applicable Actions and surveillances necessary to support the RTS. The proposed change is designated more restrictive because new requirements are added to the CTS.

M.2 CTS Note 3 in Table 3.3-1 states the following; " With the reactor trip system breakers in the closed position and the control rod drive system capable of rod withdrawal." This CTS Note is used to modify the Applicability of RTS functions needed to mitigate the consequences of rod withdrawal events. The corresponding ISTS Note (a) states; " With Rod Control System capable of rod withdrawal or one or more rods not fully inserted." The CTS is revised to conform to the ISTS. This changes the CTS by removing the reactor trip breakers (RTBs) from the applicability requirement and adding the requirement to the applicability of whenever one or more rods are not fully inserted. This DOC is intended to address the addition of the ISTS provision of "one or more rods not fully inserted" to CTS Note 3.

The CTS Applicability requires the associated RTS Functions to be operable when the possibility of an inadvertent or uncontrolled rod withdrawal accident exists. The associated RTS Functions provide reactor trip actuations to mitigate the consequences of a rod withdrawal event. In order to assure the availability of the required protection Functions the CTS Applicability requires the associated RTS Functions to be operable whenever the RTBs are closed <u>and</u> when the rod control system is capable of rod withdrawal. The proposed change to CTS Note 3 includes the addition of the ISTS provision of "with one or more rods not fully inserted." The inclusion of the ISTS provision regarding rod position provides an additional condition to the CTS Note 3 that is not currently specified in the CTS. Although the ISTS provision addressing rod position is not directly related to rod withdrawal capability, the addition of the ISTS provision provides assurance that the RTS Functions are maintained operable to provide reactor protection. The proposed addition ensures that if all rods are not fully inserted, the RTS Functions necessary to ensure the reactor can be placed in a safe condition are required operable regardless of the status of the rod control system or RTBs. Therefore, the addition of the ISTS provision of "with one or more rods not fully inserted" to CTS Note 3 provides additional assurance that the reactor is operated in a safe manner and is acceptable. However, the addition of this ISTS provision does represent a new and different condition of applicability not currently addressed in the CTS. As the proposed change to CTS Note 3 introduces a new condition to the CTS applicability requirements, this change is designated more restrictive.

M.3 CTS Action 2.a.2, for an inoperable Power Range Neutron Flux Channel, states "place the inoperable channel in trip within 6 hours and perform SR 4.2.4." The referenced SR requires that the Quadrant Power Tilt Ratio be verified within the limit. The corresponding ISTS Action in Condition D specifies the performance of a surveillance to verify QPTR but includes a periodic frequency of "Once per 12 hours" for performing this surveillance. The CTS Action 2.a.2 is revised to conform with the corresponding ISTS Action in Condition D. This changes the CTS by specifying a periodic frequency for performing the required surveillance.

The purpose of performing SR 4.2.4 as part of a Power Range channel Action requirement is to confirm (on a more frequent bases) that the Quadrant Power Tilt Ratio (QPTR) remains within the limit when a power range channel (which provides input to QPTR) is inoperable and power is maintained >75% RTP. With only 3 inputs to QPTR and power >75% RTP more frequent periodic checks of QPTR are necessary to assure the reactor core continues to operate within the radial power distribution limits specified in the QPTR TS. As such, the inclusion of the periodic Frequency to the CTS Action provides additional assurance the plant is operated within the safety analysis limits when one Power Range Neutron Flux channel input to QPTR is inoperable. Based on the need for more frequent verifications of QPTR with the input from one Power Range channel inoperable, the proposed change is acceptable. As the proposed change to CTS Action 2.a.2 adds a new requirement to the Action, this change is designated more restrictive.

M.4 CTS Action 7a requires that "the inoperable channel is placed in the tripped condition within 6 hours". The corresponding ISTS Action Conditions E, K, and L specify the same Action but also includes the requirement that if the channel is not placed in the trip condition the affected unit must be removed from the Applicable Mode associated with the RTS Function. This additional ITS Action is to reduce power to Mode 3 in ITS Condition E, or reduce power to less than P-7 for ITS Condition K, and to reduce power to less than P-9 for ITS Condition L. The CTS is revised to include the ISTS Action requirement to remove the unit from the Applicable Mode for the affected RTS Function. This changes the CTS by including a specific Action to remove the unit from the Applicable Mode of the affected RTS Function if the Action to place the channel in trip is not met.

The allowance to continue to operate with an inoperable channel in the trip condition is based on the fact that the remaining operable channels continue to provide an RTS Function that is single failure proof. The inoperable channel in the trip condition provides its safety function input to the actuation logic associated with the RTS Function. Only one of the remaining operable channels needs to trip in order to accomplish the actuation logic (typically 2-out-of-3 or 2-out-of-4). Failure to place the inoperable channel in the trip condition results in a situation where both the remaining operable channels must trip in order to accomplish the actuation logic. Therefore, failure to place the channel in the trip condition could result in the potential for a single failure of an instrument channel preventing the RTS Function from being accomplished. As such, the proposed change is acceptable because it ensures the plant is placed in a Mode where the RTS Function is no longer required operable when the channels that comprise that RTS Function may be susceptible to a single failure that could prevent the RTS Function from being accomplished. As the proposed change adds new Action requirements to the CTS, it is designated more restrictive.

M.5 CTS Action 8 applies to the Turbine Trip (Stop Valve Closure) RTS Function. Action 8 requires that "the inoperable channel is placed in the tripped condition within 6 hours". The corresponding ISTS Action Condition L specifies the same Action for this RTS Function but also includes the requirement that if the channel is not placed in the trip condition the affected unit must be removed from the Applicable Mode associated with the RTS Function. The additional ITS Action requires that power be reduced to less than P-9 for ITS Condition L. The CTS is revised to include the ITS Action requirement to remove the unit from the Applicable Mode for the affected RTS Function. This changes the CTS by including a specific Action to remove the unit from the Applicable Mode of the affected RTS Function if the Action to place the channel in trip is not met.

The applicable Mode for the turbine trip RTS Functions is ≥ P-9 (approximately 49% RTP). Below P-9 the loss of the turbine does not require a reactor trip to minimize the resulting RCS transient. The allowance to continue to operate with an inoperable channel in the trip condition is based on the fact that with the inoperable channel in the trip condition, the safety function input of that channel is accomplished. Failure to place the inoperable channel in the trip condition results in a situation where the turbine trip stop valve closure RTS Function is no longer operable. Therefore, failure to place the inoperable channel in the trip condition prevents this RTS Function from being accomplished. As such, the proposed change is acceptable because it ensures the plant is placed in a Mode where the RTS Function is no longer required operable when an inoperable channel can not be placed in the trip condition and the RTS Function may be affected. As the proposed change adds new Action requirements to the CTS, it is designated more restrictive.

M.6 CTS Action 11 applies to the Reactor Coolant Pump (RCP) breaker position RTS Function. Action 11 requires that "the inoperable channel is placed in the tripped condition within 6 hours". The corresponding ISTS Action Condition K specifies the same Action for this RTS Function but also includes the requirement that if the channel is not placed in the trip condition the affected unit must be removed from the Applicable Mode associated with the RTS Function. The additional ITS Action requires that power be reduced to less than P-7 for ITS Condition K. The CTS is revised to include the ITS Action requirement to remove the unit from the Applicable Mode for the affected RTS Function. This changes the CTS by including a specific Action to remove the unit from the Applicable Mode of the affected RTS Function if the Action to place the channel in trip is not met.

The applicable Mode for the RCP breaker position RTS Function is ≥ P-7 (approximately 10% RTP). Below P-7 the RCP breaker position trip function is blocked by the P-7 interlock and the trip is not assumed to function in the safety analyses. The allowance to continue to operate with an inoperable channel in the trip condition is based on the fact that with the inoperable channel in the trip condition, the safety function input of that channel is accomplished. Failure to place the inoperable channel in the trip condition results in a situation where both the remaining operable channels must trip in order to accomplish the actuation logic. Therefore, failure to place the channel in the trip condition could result in the potential for a single failure of an instrument channel preventing the RTS Function from being accomplished. As such, the proposed change is acceptable because it ensures the plant is placed in a Mode where the RTS Function is no longer required operable when the channels that comprise that RTS Function may be susceptible to a single failure that could prevent the RTS Function from being accomplished. As the proposed change adds new Action requirements to the CTS, it is designated more restrictive.

M.7 Unit 2 only (Unit 1 does not have an Action 44). Action 44 is applicable to the Unit 2 RTS Interlock Functions (i.e., P-6, P-8, P-9, etc.). The Unit 2 CTS Action 44 requires that action be taken "With less than the Minimum Number of Channels OPERABLE...." The CTS minimum channels operable requirement for the RTS Interlock Functions is one less than the total number of Interlock channels. As such the CTS does not require any Action when a single interlock channel is inoperable. The corresponding ITS Actions Conditions O and P specify that Action be taken when "one or more channels are inoperable". The ITS Actions are based on the "Required" or total number of channels. As such, the ITS Actions for the RTS interlocks require that action be initiated as soon as a single interlock channel becomes inoperable. The CTS is revised to conform to the ISTS. This changes the CTS by specifying that action be initiated when a single interlock channel becomes inoperable.

The RTS interlock Functions serve to enable certain RTS Functions at specific power levels to ensure these RTS Functions are available when required and as assumed in the safety analyses. The Action requirements for an inoperable interlock channel require that the status of the interlock be verified to be correct for the current plant conditions. This action confirms the interlock is functioning properly and that the required RTS Functions are available as assumed in the applicable safety analyses. The proposed change, which requires the interlock status to be verified when any single input channel is inoperable, is acceptable because this change provides additional assurance that the plant continues to be operated within the assumptions of the safety analyses. The performance of this additional action requirement provides confirmation that the RTS is functioning properly when a channel is inoperable and does not represent an undue burden on plant personnel. As the proposed change adds new Action requirements to the CTS, it is designated more restrictive.

M.8 Unit 2 only (Unit 1 does not have an Action 44). Action 44 is applicable to the Unit 2 RTS Interlock Functions (i.e., P-6, P-8, P-9, etc.). CTS Action 44 requires that the interlock be determined to be "in its required state for the existing plant condition". The default action requirement if the interlock can not be determined to be in the required state within 1 hour is to apply Specification 3.0.3. Specification 3.0.3 allows 1 hour to prepare for a plant shutdown and then up to 6 hours to be in Mode 3 or 8 hours total from when the channel is first declared inoperable before the shutdown must be complete. The corresponding ITS Action O and P contains different default Actions if the interlock can not be verified to be in the required state. ITS Condition O requires the plant be placed in Mode 3 in a total of 7 hours and is applicable to those interlock Functions that are required operable in Modes 1 and 2. ITS Condition P requires the plant be placed in Mode 2 in a total of 7 hours and is applicable to those interlock Functions required operable in Mode 1. The CTS Action is revised to conform to the ISTS. This changes the CTS Action by including the specific power reduction necessary to remove the plant from the applicable Mode for the affected interlock Function and by reducing the total time allowed to complete the actions by 1 hour.

The proposed change is acceptable because it is necessary to conform to the ISTS and because it simplifies the required Actions consistent with the Applicable Modes of the affected RTS Functions. Typically in the ISTS, the Action requirements provide the appropriate default Actions to assure the plant is placed in a safe Mode without referencing Specification 3.0.3. The CTS requirement to apply Specification 3.0.3 is unnecessary to assure the plant is placed in a safe condition if an RTS interlock is inoperable or can not be verified in the required state. The slightly reduced time to complete the required actions is also acceptable because it is sufficient to safely complete the required power reduction without challenging plant systems. As the proposed change reduces the total time allowed to complete the Actions, it is designated more restrictive.

M.9 Unit 1 only (Unit 2 does not use Action 3 or 12 for the RTS Interlock Functions). CTS Action 3 is applicable to the Unit 1 RTS P-6 Interlock Function. CTS Action 12 is applicable to the other RTS interlocks (P-8, P-9, P-10). The CTS Action 3 and 12 require that action be taken "With less than the Minimum Number of Channels OPERABLE...." The CTS minimum channels operable requirement for the RTS Interlock Functions is one less than the total number of Interlock channels. As such the CTS does not require any Action when a single interlock channel is inoperable. The corresponding ITS Action Conditions O and P specify that Action be taken when "one or more channels are inoperable". The ITS Actions are based on the "Required" or total number of channels. As such, the ITS Actions for the RTS interlocks require that action be initiated as soon as a single interlock channel becomes inoperable. The CTS is revised to conform to the ISTS. This changes the CTS by specifying that action be initiated when a single interlock channel becomes inoperable.

The RTS interlock Functions serve to enable certain RTS Functions at specific power levels to ensure these RTS Functions are available when required and as assumed in the safety analyses. The Action requirements for an inoperable interlock channel require that the status of the interlock be verified to be correct for the current plant conditions. This action confirms the interlock is functioning properly and that the required RTS Functions are available as assumed in the applicable safety analyses. The proposed change, which requires the interlock status to be verified when any single input channel is inoperable, is acceptable because this change provides additional assurance that the plant continues to be operated within the assumptions of the safety analyses. The performance of this additional action requirement provides confirmation that the RTS is functioning properly when a channel is inoperable and does not represent an undue burden on plant personnel. As the proposed change adds new Action requirements to the CTS, it is designated more restrictive.

M.10 Unit 1 only (Unit 2 already requires the P-10 interlock in Modes 1 and 2). The CTS Applicability for the P-10 RTS Interlock Function requires the Function to be operable in Mode 1. The ISTS Applicability for the P-10 RTS Function (and the BVPS Unit 2 Applicability) require the P-10 RTS Interlock Function to be operable in Modes 1 and 2. The Unit 1 CTS is revised to conform to the ISTS (and BVPS Unit 2). This changes the CTS by requiring the P-10 RTS Interlock Function on Unit 1 CTS Tables 3.3-1 and 4.3-1 to be operable in Mode 2 as well as Mode 1.

One of the safety Functions of the P-10 interlock is to enable low power reactor trips on decreasing power (Power Range Low and intermediate Range trips). The RTS functions enabled by the P-10 interlock on decreasing power provide core protection during decreasing power into Mode 2. In Mode 2, below the P-6 interlock, the source range RTS trip function is enabled to provide the required core protection. As such, the expansion of the Applicable Modes for the P-10 Function to include Mode 2 is acceptable because it provides additional assurance that the interlock is available and functioning properly when required to provide core protection. In addition, the proposed change revises the CTS to be more consistent with the plant design (i.e., the function of the RTS Interlocks) and the assumptions of the applicable safety analyses. As the proposed change expands the Applicability requirements of the CTS, it is designated more restrictive.

M.11 The CTS daily channel calibration surveillance assigned to the power range neutron flux high setpoint on Table 4.3-1 consists of adjusting the power range instrument channels to match the calorimetric heat balance calculation each day. The CTS surveillance is modified by Note 2 that states the surveillance is only required above 15% RTP. The corresponding ISTS SR 3.3.1.2 specifies that the power range channel output be adjusted if calorimetric heat balance calculation results exceed power range channel output by more than + 2% RTP. The ITS surveillance is modified by a Note that states the surveillance is not required to be performed until 24 hours after Thermal Power is ≥ 15% RTP. The CTS is revised to be consistent with the ITS. This changes the CTS by adding more specific requirements for the performance of the daily adjustment of the power range channels to the results of the calorimetric heat balance calculation.

The proposed changes provide additional guidance for performing the daily power range instrumentation surveillance. A specific criterion for adjusting the instrumentation is established to ensure the power range channel output is adjusted when the calorimetric calculation result exceeds the power range output by more than + 2% RTP. In addition, the ISTS note establishes a specific time limit for performing the first adjustment of the power range channels during power escalation. The proposed changes are acceptable because they provide additional assurance that the daily power range instrument adjustments are accomplished in a timely and controlled manner such that the accuracy of the power range instrumentation is maintained within acceptable limits relative to the applicable safety analysis assumptions. As such, the proposed change enhances the assurance provided by the TS that the affected plant equipment is maintained operable and that the plant continues to be operated in a safe manner. The proposed change is designated more restrictive because it includes additional requirements that are not specified in the CTS.

M.12 The CTS monthly channel calibration requirement associated with the power range neutron flux high setpoint on Table 4.3-1 is modified by Note 3. CTS Note 3 specifies that the surveillance consist of an incore-excore comparison every 31 EFPD above 50% RTP and that the Nuclear Instrumentation System (NIS) be recalibrated (adjusted) if the absolute difference is > 3%. The corresponding proposed BVPS ITS surveillance SR 3.3.1.3 contains an additional Note that specifies the first performance of the surveillance must be completed within 7 days of exceeding the specified power level. The CTS is revised to conform to the proposed BVPS ITS surveillance requirement. This changes the CTS by placing a new time restriction on the first performance of the surveillance after exceeding the specified power. Without the 7-day limit imposed by the change the full surveillance interval of 31 EFPD after achieving the specified power could be applied before the CTS surveillance was required to be complete.

The first performance of this surveillance after a shutdown or refueling outage is important to establish the NIS accuracy is within acceptable tolerances. The proposed change is acceptable because it provides assurance that the surveillance is completed in a timely manner and that the NIS accuracy is verified within acceptable limits shortly after a plant startup. As such, the proposed change enhances the assurance provided by the TS that the NIS is maintained operable and that the plant continues to be operated in a safe manner. The proposed change is designated more restrictive because it includes additional requirements that are not specified in the CTS.

M.13 The CTS surveillances for the Power Range Low setpoint and Intermediate Range RTS Functions specified in Table 4.3-1 require a Channel Functional Test (CFT) to be performed Prior to Startup (S/U) if not performed in the previous 31 days (Note 1). The corresponding ISTS surveillance SR 3.3.1.8 (BVPS ITS SR 3.3.1.7) also requires a Channel Operational Test (COT) prior to reactor startup. However, the ISTS Surveillance Frequency is modified by a Note that states the surveillance is only required if it has not been performed in the previous 92 days. The ISTS surveillance also requires the performance of the COT 12 hours after reducing power below P-10 during shutdowns and every 92 days on a periodic basis as long as the plant is maintained in the Applicable Mode. The ISTS surveillance also requires a verification that the P-6 and P-10 interlocks are in their required state for existing plant conditions. The CTS surveillance requirements for these RTS Functions are revised to conform to the ISTS. This changes the CTS requirement to perform the surveillance prior to reactor startup by the addition of requirements to perform the surveillance during a shutdown (within 12 hours after reducing power below P-10) and the addition of the requirement to repeat the surveillance every 92 days on a periodic basis after startup or during a shutdown while maintaining the plant in the Applicable Mode (Mode 2 and Mode 1 < P-7). The ISTS requirement to verify the state of the P-6 and P-10 interlocks are also included in the CTS requirement. The change in the frequency from 31 days to 92 days prior to startup is addressed in an L DOC.

The purpose of the surveillance requirement is to confirm the operability of the affected RTS Functions when they are required operable (Mode 2 and Mode 1 <P-10). During operation In this low power condition the Power Range Low Setpoint RTS trip Function is assumed in the safety analysis to protect the core. The P-6 and P-10 interlocks function to enable the appropriate RTS Functions depending on the power. The CTS requirements only specify a single CFT prior to startup. As the plant is not typically operated in Mode 2 and Mode 1 < 10% RTP for extended periods, the CTS requirement is generally adequate to ensure the operability of the required RTS Functions. However, the ISTS provides additional requirements that verify the interlock status and provide additional operability verifications in the event that the plant is operated within a low power condition for an extended time. The proposed changes are acceptable because they are necessary to confirm that the required protection Functions are enabled and maintained operable in the event that the plant is operated in this low power range for an extended period. As such, the proposed changes provide assurance that the plant continues to be operated consistent with the applicable safety analysis assumptions. As the proposed changes include additional surveillance requirements not in the CTS, they are designated more restrictive.

M.14 The Unit 1 and 2 CTS surveillances for the Power Range High Positive Rate, Overpower and Overtemperature ΔT RTS Functions and the Unit 2 surveillances for the Pressurizer Pressure - Low RTS Function specified on Table 4.3-1 include the requirement to perform a channel calibration. The corresponding ISTS channel calibration surveillance requirement (ITS SR 3.3.1.10) includes an additional requirement (Note) that affects the RTS Functions listed above. The ISTS channel calibration surveillance requirement includes a Note that requires the verification that time constants are adjusted to the prescribed values. The RTS Functions listed above have time constants associated with their allowable values and trip setpoints. The CTS surveillance requirements are revised to conform to the ISTS. This changes the CTS requirements by including a specific requirement to verify the time constants associated with the RTS Functions listed above.

The Power Range High Positive Rate, Overpower and Overtemperature ΔT RTS Functions and the Unit 2 Pressurizer Pressure - Low RTS Function have time constants included in their respective allowable values and trip setpoints. The time constants are part of the RTS Function's required setpoint and must be adjusted correctly for the RTS Function to be operable consistent with the assumptions of the applicable safety analyses. The inclusion of the explicit ISTS requirement to verify the time constants is acceptable because it ensures that the verification of time constants is included in the TS requirement to perform a channel calibration. Thus, the proposed change provides additional assurance that the required setpoints for the RTS Functions listed above are properly calibrated and that the plant continues to be operated within the assumptions of the safety analyses. As the proposed change includes additional requirements not explicitly stated in the CTS, it is designated more restrictive.

M.15 The CTS surveillances for the Source Range RTS Function specified on Table 4.3-1 include the requirement to perform a Channel Functional Test (CFT) quarterly. The CTS CFT requirement is modified by Note 8 which states that " Below P-6, not required to be performed for source range instrumentation prior to entering MODE 3 from MODE 2 until 12 hours after entry into MODE 3." The corresponding BVPS proposed ITS surveillance (SR 3.3.1.6) requires that a Channel Operational Test (COT) be performed quarterly. The ITS surveillance is modified by a note that states "Not required to be performed for source range instrumentation until 12 hours after power has been reduced below P-6." The differences between the CTS CFT and the ISTS COT are addressed in the DOCs associated with these defined terms in Section 1.0 of the TS. This Doc is only intended to address the difference between the CTS Note modifying the CFT and the ITS Note modifying the COT for the Source Range RTS Function. As such, the proposed change revises the CTS by changing the start of the 12 hour time delay allowed for performing the surveillance during shutdowns from after Mode 3 entry to after power is reduced below P-6.

The Source Range RTS Function is enabled in Mode 2 when power is decreased below the P-6 interlock. During operation in Mode 2 below the P-6 interlock and in Modes 3, 4, and 5 when the rod control system is capable of rod withdrawal the Source range RTS Function provides protection for the reactor in the event of an reactivity excursion. The CTS and ISTS surveillance requirements for the Source Range Function provide a delay before the quarterly surveillance must be performed upon decreasing power. The delay is necessary as the source range detectors are energized by the P-6 RTS Interlock when power goes below the P-6 setpoint. Therefore, some time after decreasing power below P-6 is necessary to prepare for and execute the required surveillance in an orderly manner when the source range instrumentation is energized. CTS Note 8 provides the necessary delay time and is worded such that the time delay does not begin until after Mode 3 entry. However, the Source Range Function is required operable in Mode 2 below the P-6 interlock as well as in Mode 3 with the rod control system capable of rod withdrawal. The proposed ITS surveillance Note provides the same delay time as the CTS but the ITS Note more clearly specifies that the time begins when power is reduced below P-6 not after entry into Mode 3. The proposed change is acceptable because it addresses the condition where the plant may be operated in Mode 2 below P-6 for an extended time. Therefore, the proposed change provides assurance that the required Source Range Function quarterly surveillance will be performed within the 12 hour time delay even if the plant is operated in Mode 2 below the P-6 interlock for an extended period prior to Mode 3 entry. As such, the proposed change is more consistent with the Applicable Modes specified in the TS for the Source Range RTS Function and the proposed change provides additional assurance that the plant is operated consistent with the assumptions of the applicable safety analyses. As the proposed change includes more stringent requirements than the CTS, it is designated more restrictive.

M.16 Unit 1 only. The Unit 1 CTS surveillances specified on Table 4.3-1 for the Turbine Trip RTS Functions do not include channel calibrations every refueling cycle. The corresponding ISTS surveillance requirements (and the Unit 2 surveillance requirements) for this RTS Function include a requirement to perform channel calibrations every 18 months. The Unit 1CTS is revised to conform to the ISTS and Unit 2. This changes the Unit 1CTS by adding the requirement to perform channel calibrations on the Turbine Trip RTS Functions every 18 months.

The proposed change is acceptable because it provides added assurance that the affected RTS Functions are maintained operable. The 18-month channel calibration of TS required instrumentation is a proven industry standard for confirming instrument operability and assuring continued acceptable performance. As such, the addition of this surveillance requirement to the BVPS Unit 1 TS provides greater assurance of instrument operability and reliability without any adverse affects on the safe operation of the plant. As the proposed change includes more stringent requirements than the CTS, it is designated more restrictive.

M.17 Unit 1 only. The Unit 1 CTS surveillance requirements specified on Table 4.3-1 for the manual reactor trip function do not include the Applicable Modes for this RTS Function. In addition, the surveillance requirements specified on Table 4.3-1 for the power range neutron flux - low trip setpoint RTS Function do not include Mode 1 below the P-10 Interlock in the Applicable Modes for this RTS Function. The ISTS includes all the Applicable Modes for each RTS Function in the single combined ISTS Table 3.3.1-1. The CTS is revised to conform to the ISTS. This changes the CTS Table 4.3-1 by combining it with CTS Table 3.3-1 such that each RTS Function has all the associated requirements (including the Applicable Modes as modified by footnotes (a) and (b)) specified on a single Table. The proposed change results in the applicable Modes being correctly and consistently specified each affected Function in the RTS TS.

The manual reactor trip function is required in Modes 1 and 2 and in Modes 3, 4, and 5 when the rod control system is capable of rod withdrawal (Note a). The power range neutron flux low trip setpoint is required in Mode 1 below the P-10 interlock (Note b) and in Mode 2. The applicable Modes for these Functions are correctly specified on CTS Table 3.3-1. The proposed change makes the Applicable Modes specified for the manual reactor trip and power range neutron flux- low RTS Functions on CTS Table 4.3-1 more consistent with the requirements specified for the same

RTS Functions on CTS Table 3.3-1. The proposed change is acceptable because it also makes the Applicable Modes specified for these Functions more consistent with the applicable safety analyses and design of the RTS. The rules of TS (Section 3.0) require that the surveillances associated with each RTS Function be met during the Modes when that Function is required operable. As such, the proposed change makes the Applicable Modes for the surveillance requirements correspond to the Modes of operation where the affected RTS Functions are required operable to provide core protection. As the proposed change includes more stringent requirements than the CTS, it is designated more restrictive.

M.18 CTS Table 3.3-1 contains a line item that addresses the requirements for the reactor Trip Breakers (RTBs). CTS Table 3.3-1 does not contain any reference to the RTB bypass breakers. The corresponding ISTS Table 3.3.1-1 contains a footnote (g) that modifies the requirements for the RTBs such that the RTB requirements are applicable to an RTB bypass breaker when the bypass breaker is racked in and closed to bypass an RTB. The CTS is revised to conform to the ISTS. This changes the CTS by providing specific requirements that are applicable to the bypass breakers when they are used in place of the RTBs.

The proposed change results in the more specific RTB requirements being applied to the RTB bypass breakers when they are in service. The bypass breakers are routinely placed in service to allow testing of the RTBs. However, CTS Table 3.3-1 did not specifically address the use of the bypass breakers. The proposed change is acceptable because it ensures that the RTB Bypass breakers are maintained operable in accordance with the same requirements applicable to the RTBs. Thus, by providing specific requirements for the bypass breakers, the proposed change provides additional assurance that the bypass breakers remain capable of performing their safety function and that the plant continues to be operated in a safe manner consistent with the applicable safety analyses. As the proposed change adds requirements to CTS Table 3.3-1, it is designated more restrictive.

M.19 A new ITS surveillance BVPS ITS SR 3.3.1.9 (ISTS 3.3.1.6) is added to the CTS surveillances for the power range neutron flux high trip setpoint on CTS Table 4.3-1. The new surveillance requires that the excore nuclear instrumentation channels be calibrated to agree with incore detector measurements once per refueling cycle. The new surveillance is modified by a note that establishes the criteria for the initial performance following a refueling outage. The note requires that the surveillance be performed within 7 days after thermal power exceeds 50% RTP. The CTS is revised to incorporate this new surveillance requirement.

The proposed change adds a surveillance that is normally performed at the beginning of core life to normalize the excore f(ΔI) input to the overtemperature ΔT Function and the ΔI inputs used to determine AFD and QPTR. Although the surveillance is only associated with the overtemperature ΔT RTS Function, it is included in both the power range neutron flux high setpoint RTS Function and the overtemperature ΔT RTS Function. Since the overtemperature ΔT RTS Function only has three of the four power range channels associated with it and the surveillance must be performed on all four power range channels (for correct ΔI inputs to AFD and QPTR), the new surveillance is included in two RTS Functions to ensure all power range channels are required to be calibrated.

The proposed change is acceptable because it helps to ensure the excore instrumentation is accurately calibrated for each new core. The calibration provides addional assurance that the overtemperature ΔT RTS Function remains fully operable and that each power range channel ΔI input to AFD and QPTR is accurate. The proposed change is also consistent with current BVPS practice and is normally performed during initial operation with a new core. Adding the proposed change to the CTS surveillance requirements enhances the assurance provided by the TS that the plant continues to be operated in a safe manner consistent with the assumptions of the safety analyses. As the proposed change adds requirements to CTS, it is designated more restrictive.

M.20 CTS Action 40a, applicable to the RTB undervoltage and shunt trip mechanisms, includes the allowance to bypass the RTB in order to perform maintenance on the trip mechanisms. The CTS Action states "Neither breaker shall be bypassed while one of the diverse trip features is inoperable except for the time required for performing maintenance to restore the breaker to OPERABLE status." The ISTS contains a corresponding note (#2) in the Action Condition (ITS Condition N) for an inoperable RTB that states "One RTB may be bypassed for up to 2 hours for maintenance on undervoltage or shunt trip mechanisms, provided the other train is OPERABLE." The CTS allowance is revised to conform to the ISTS note. This changes the CTS allowance by limiting the time the RTB can be bypassed to 2 hours and requiring the other RTB train to be operable.

The proposed change involves the allowance to bypass an RTB to perform maintenance on the RTB trip mechanisms. When an RTB bypass breaker is racked in and closed, the bypass breaker and the other RTB are actuated from the same train of actuation logic. Therefore, the RTS system is no longer single failure proof. The proposed change limits the time that the plant can be operated in this condition and provides assurance that the remaining RTB is operable when in this condition. The proposed change is acceptable because it provides additional assurance that the plant continues to be operated in a safe and conservative manner. The proposed change places appropriate restrictions on the allowance to bypass an RTB that limit the time the plant can be operated when the RTS system is no longer single failure proof. In addition, the proposed change requires that the RTB remaining in service be operable when bypassing the other RTB to assure full functionality of the remaining protection capability. As the proposed change adds requirements to CTS, it is designated more restrictive.

M.21 The CTS is revised by the addition of new Applicable Modes and Actions for the Power Range Neutron Flux Low Trip Function. The addition of the new Modes and Actions is consistent with the Westinghouse Owners Group TSTF-453. TSTF-453 was developed to address issues identified in Westinghouse Nuclear Safety Advisory Letter (NSAL)-00-016.

NSAL-00-016 discussed reactor trip functions and specific plant conditions that are required to address an Uncontrolled Rod Cluster Control Assembly (RCCA) Bank Withdrawal from a Low Power or Subcritical Condition event (RWFS). Specifically, the NSAL addressed the issues with crediting the source range instrumentation for mitigating an RWFS event. The NSAL also addressed the use of the power range instrumentation to mitigate an RWFS event and the need for a low temperature limit for power range instrument operability. If power range instrumentation is relied on to mitigate an RWFS event, the NSAL recommended administrative controls (boration of the RCS to an all rods out (ARO) condition) be adopted when RCS temperatures are less than the low temperature limit for power range instrument operability and the potential for an RWFS exists.

TSTF-453 was developed by the Westinghouse Owners Group to more fully and appropriately address the issues discussed in NSAL-00-016 in the Technical Specifications. The following changes are introduced into the Improved Standard Technical Specifications for Westinghouse Plants by TSTF-453:

- Section 3.1 of the ITS is revised by the addition of LCO 3.1.10, "Boron Limitations < 500 °F," to address the potential for an RWFS event in Modes 2 and 3 with RCS temperature < 500 °F and in Modes 4 and 5, and

- Section 3.3 of the ITS (specifically LCO 3.3.1, "RTS Instrumentation") is revised to increase the Applicable Modes for the Power Range Neutron Flux- Low Trip Function in Modes 2 and 3 when the RCS temperature is ≥ 500 °F and to provide associated Actions to address the potential for an RWFS event at RCS temperatures ≥ 500 °F.

The TS changes introduced by TSTF-453 provide more complete protection from an RWFS and effectively replace the NSAL-00-016 recommended administrative controls. The Changes to ITS Section 3.1 are addressed in more detail in that Section of the TS. The following discussion addresses the changes to LCO 3.3.1, "RTS Instrumentation".

The proposed changes to LCO 3.3.1, "RTS Instrumentation" consist of expanding the Mode of Applicability for the Power Range Neutron Flux- Low Trip Function to include operation in Modes 2 and 3 when the RCS temperature is ≥ 500 °F and the potential for an RWFS event exists. The proposed change recognizes the RCS temperature related operability limitation of the Power Range instrumentation. The ≥ 500 °F RCS temperature limitation of the Power Range instrumentation is due to instrument calibration issues associated with shielding caused by cold water in the downcomer region of the reactor vessel.

The low temperature limit of 500 °F for the operability of the power range instrumentation, introduced by TSTF-453, was confirmed to be applicable for the BVPS power range instrumentation. The BVPS power range instrumentation will provide the required protective function at RCS temperatures ≥ 500 °F.

The definition of the new Applicable Modes is accomplished by the addition of new Applicability footnotes (c) and (d) to Mode 2 and footnote (e) to Mode 3. All the other subsequent footnotes are re-lettered as necessary due to the addition of the three new footnotes. Footnotes (c) and (d) serve to divide the Mode 2 applicability into a critical Applicability (i.e., $k_{eff} \geq 1$) and a subcritical applicability (i.e., $k_{eff} < 1$). The separate Mode 2 footnotes are necessary as the potential for an RWFS event exists during subcritical operation in Mode 2 as well as in Mode 3.

In addition to the change in Applicability, new Actions (Conditions R and S) are added for the Power Range Neutron Flux- Low Trip Function. The new Action Conditions are associated with the new Mode 2 and 3 Applicability when the potential for an RWFS event exists. The new Actions provide appropriate remedial measures for inoperable Power Range Neutron Flux- Low Trip Function channel(s) that address the potential for an RWFS in the new Applicable Modes.

The proposed changes are acceptable because they provide additional protection in the TS for an RWFS event. The proposed changes provide additional assurance that the plant will be operated in a safe manner when the potential for an RWFS event exists. Together with the new ITS LCO 3.1.10, "RCS Boron Limitations < 500 $^{0}$F," the proposed changes provide a more complete set of TS requirements (for both above and below an RCS temperature of 500 $^{0}$F) that address the potential for an RWFS event. As such, the proposed changes do not adversely affect the safe operation of the plant.

As the proposed changes include new operating restrictions (TS requirements) the changes are designated as more restrictive.

## *Removed Detail Changes (LA)*

LA.1 *(Type 3 - Removing Procedural Details for Meeting Tech Spec Requirements)* CTS Surveillance 4.3.1.1.3 specifies that response time testing be performed for the RTS instrument Functions. The CTS surveillance includes guidance for performing the testing that specifies "Each test shall include at least one logic train such that both logic trains are tested at least once per 36 months". The corresponding ISTS surveillance requirement does not contain similar guidance for performing the response time testing. The CTS is revised to conform to the ISTS and the CTS guidance for performing response time testing is moved into the bases for the response time test surveillance. This change also includes the editorial revisions made to the corresponding Unit 1 response time testing surveillance (not shown) to change the Unit 1 CTS wording from "test" and "tested" to the more common ISTS descriptive terms of "verify" and "verified" which is also consistent with the corresponding Unit 2 surveillance.

The removal of the procedural guidance in the CTS surveillance requirement is acceptable because this type of information is not necessary to be included in the TS to provide adequate protection of public health and safety. The editorial changes (test to verify) made to the Unit 1 information being removed are acceptable because they do not affect the technical intent of the surveillance. The ITS still retains the requirement that response time testing be performed for the required instrument Functions. The procedural method of testing specified in the CTS is not required in order for the LCO operability requirements to be applicable and enforced. The editorial changes to the Unit 1 material being removed are made solely to conform to the ISTS presentation of this information and with the current Unit 2 terminology. Also, the removal of the procedural detail is acceptable because this type of procedural guidance will be adequately controlled in the ITS Bases consistent with the format and content of the ISTS. Changes to the Bases are controlled by the TS Bases Control Program specified in the Administrative Controls Section of the TS. This program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because procedural detail is being removed from the TS.

LA.2 *(Type 1 - Removing Details of System Design and System Description, Including Design Limits)* The Channels To Trip column in CTS Table 3.3-1 is deleted consistent with the ISTS. The corresponding ISTS RTS Table 3.3.1-1 does not include this information. The channels required to initiate an RTS function trip is described in the ITS Bases for each RTS Function.

The proposed change is acceptable because the Channels To Trip column in CTS Table 3.3-1 contains information describing the design of the RTS which is not required to ensure the RTS system is maintained operable. The ISTS "Required Channels" specifies the necessary channels to maintain the RTS operable and the ISTS Actions provide the appropriate measures when the Required Channels are not met.

RTS design features are also described in the UFSAR. Changes to the plant design as described in the FSAR are subject to the review requirements of 10 CFR 50.59. In addition, the requirements for the RTS design are also controlled by the required industry standards (IEEE 279, etc.), federal regulations (General Design Criteria), and specific NRC requirements and guidelines pertaining to the RTS. Changes to these plant design requirements are in turn controlled in accordance with the Quality Control Programs that are required by federal regulations (10 CFR 50.54). Also, this change is acceptable because the design description information will be retained within the ITS bases for each RTS Function and changes to the ITS Bases are controlled by the TS Bases Control Program specified in the Administrative Controls Section of the TS. This program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because design detail is being removed from the TS.

LA.3 *(Type 1 - Removing Details of System Design and System Description, Including Design Limits)* The CTS RTS Functions 12 and 13 (Loss of Flow) contain operational descriptions of how these Functions work. CTS Function 12, is effective above the P-8 interlock and provides a reactor trip with low flow in a single RCS loop. CTS Function 13 is effective above the P-7 interlock and below the P-8 interlock and provides a reactor trip with low flow in two RCS loops. However, these CTS Functions utilize the same instrumentation and setpoints. In the ISTS, the operation of this RTS Function above and below the P-8 interlock is described in the RTS bases and the ISTS only specifies a single low flow Function that requires the affected instrument channels operable above the P-7 interlock. The CTS is revised consistent with the ISTS. This changes the CTS by moving the description of the Function design and operation into the associated RTS bases.

The proposed change is acceptable because the information removed from the CTS Table 3.3-1 is not required in the TS to ensure the affected RTS instrumentation is maintained operable. The TS still requires the affected instrumentation to be operable in the applicable modes or specifies the appropriate Action to be taken in a similar manner as before. The description of how this function is designed to operate above or below the P-8 interlock is not required in the TS to ensure the appropriate RTS instrumentation is maintained operable. Also, this change is acceptable since changes to the ITS Bases are controlled by the TS Bases Control

Program specified in the Administrative Controls Section of the TS. This program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because design detail is being removed from the TS.

LA.4 *(Type 1 - Removing Details of System Design and System Description, Including Design Limits)* The allowable values specified for CTS Functions 11, 13, 14, 23d, and 23e on Table 3.3-1 contain design related descriptions that help to describe the allowable values (e.g., % of instrument span, % of indicated flow, or whether the setpoint is applied going up or down in power). The corresponding ISTS allowable values specified on Table 3.3.1-1do not contain this additional descriptive information and simply present the allowable values as numerical values denoted as a percent. The CTS allowable values are revised to conform more closely to the corresponding ISTS allowable values. This changes the CTS by moving the design details associated with each allowable value listed above into the Bases description of the associated RTS Function.

The proposed change is acceptable because it is necessary to conform more closely to the ISTS and because the design description associated with each affected allowable value is not required in the TS to ensure the operability of the associated RTS Function. The ITS continues to specify the setpoint in a simplified format and require that the associated RTS instrumentation be maintained operable. In addition, the design information associated with allowable values is documented in the RTS setpoint methodology referenced in the RTS bases. The setpoint methodology documents the design basis of the RTS Function allowable values, not the TS. In addition, the design information being moved from the affected allowable values specified in CTS Table 3.3-1 will be retained in the RTS bases for each of the associated RTS Functions. As such, this change is also acceptable because changes to the ITS Bases are controlled by the TS Bases Control Program specified in the Administrative Controls Section of the TS. This program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because design detail is being removed from the TS.

LA.5 *(Type 3 - Removing Procedural Details for Meeting Tech Spec Requirements)* CTS Action Note 6 modifying CTS Action 7 (applicable to the OverTemperature (OT) and OverPower (OP) RTS Functions) states; "An OPERABLE hot leg channel consists of: 1) three RTDs per hot leg, or 2) two RTDs per hot leg with the failed RTD disconnected and the required bias applied." The corresponding ISTS Action Condition E does not contain this level of detail describing the system operability requirements. The CTS is revised to conform to the ISTS. This changes the CTS by removing the descriptive detail contained in Note 6 and placing it in the ISTS bases for the OT and OP RTS Functions.

The proposed change is acceptable because the information removed from the CTS Actions is not required in the TS to ensure the affected RTS instrumentation is maintained operable. The TS still requires the affected instrumentation to be operable in the applicable modes or specifies the appropriate Action to be taken in a similar manner as before. The detailed operability description of this RTS Function is more appropriately contained in the bases description of the RTS Function. The

ISTS typically contains this type of information in the bases. Also, this change is acceptable because changes to the ITS Bases are controlled by the TS Bases Control Program specified in the Administrative Controls Section of the TS. This program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because operability details are being removed from the TS.

LA.6 *(Type 3 - Removing Procedural Details for meeting Tech Spec Requirements)* Unit 2 only (Unit 1 does not have Action 44). Action 44 is applicable to the Unit 2 RTS Interlock Functions (i.e., P-6, P-8, P-9, etc.). CTS Action 44 specifies the following for an affected interlock; "determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition." The corresponding ITS Action Conditions O and P require the following; "verify interlock is in required state for existing unit conditions." The CTS Action is revised to conform to the ISTS. This changes the CTS by removing the specific procedural guidance explaining how to verify the interlock status (by observation of the associated permissive annunciator window(s)) from the TS and placing this guidance in the associated TS Bases.

The proposed change is acceptable because the information removed from the CTS Actions is not required in the TS to ensure the affected RTS instrumentation is maintained operable. The TS still requires the affected instrumentation to be operable in the applicable Modes or specifies the appropriate Action to be taken in a similar manner as before. The procedural detail for completing the required actions is more appropriately contained in the bases description of the Action. The ISTS typically contains this type of information in the bases. Also, this change is acceptable because changes to the ITS Bases are controlled by the TS Bases Control Program specified in the Administrative Controls Section of the TS. This program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because procedural details are being removed from the TS.

LA.7 *(Type 3 - Removing Procedural Details for meeting Tech Spec Requirements)* The refueling surveillance requirement on CTS Table 4.3-1 for the Manual Reactor Trip Function is modified by Note 10. CTS Note 10 states "The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip circuits for the Manual Reactor Trip Function. The test shall also verify the OPERABILITY of the Bypass Breaker trip circuit(s)". The corresponding ISTS surveillance requirement does not contain this procedural detail for testing the Manual Reactor Trip Function. The CTS is revised to conform to the ISTS. This changes the CTS by moving the procedural instructions in CTS Note 10 to the bases for the affected surveillance requirement.

The proposed change is acceptable because the information removed from the CTS Surveillance Requirement is not required in the TS to ensure the affected RTS instrumentation is maintained operable. The TS still requires the surveillance testing to be performed on the affected RTS Function. The procedural detail for completing the surveillance testing is more appropriately contained in the bases description of the Surveillance Requirement. The ISTS typically contains this type of information in the bases. Also, this change is acceptable because changes to the ITS Bases are controlled by the TS Bases Control Program specified in the

Administrative Controls Section of the TS. This program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because procedural details are being removed from the TS.

LA.8 *(Type 3 - Removing Procedural Details for meeting Tech Spec Requirements)* The CTS surveillance requirements for the Reactor Trip Breakers (RTBs) specified on Table 4.3-1 require a Channel Functional Test (CFT). The CTS CFT is modified by a note (#11) that states "The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip attachments of the Reactor Trip Breakers." The corresponding ISTS surveillance (SR 3.3.1.4) specifies a Trip Actuating Device Operational Test (TADOT) be performed on the RTBs. The ISTS surveillance does not contain the same note as the CTS CFT. The CTS is revised to conform to the ISTS. This changes the CTS by moving the CTS surveillance note into the ITS Bases associated with the surveillance. The change in defined test terms from CFT to TADOT was addressed in TS Section 1.0, Definitions. This DOC is only intended to address moving the CTS note into the TS Bases.

The proposed change is acceptable because the information removed from the CTS Surveillance Requirement is not required in the TS to ensure the affected RTS instrumentation is maintained operable. The TS still requires the surveillance testing to be performed on the affected RTS Function. The procedural detail for completing the surveillance testing is more appropriately contained in the bases description of the Surveillance Requirement. The ISTS typically contains this type of information in the bases. Also, this change is acceptable because changes to the ITS Bases are controlled by the TS Bases Control Program specified in the Administrative Controls Section of the TS. This program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because procedural details are being removed from the TS.

LA.9 *(Type 3 - Removing Procedural Details for meeting Tech Spec Requirements)* The CTS monthly CFT surveillance for the RTB Bypass Breakers specified in Table 4.3-1 is modified by a note (#12) that states "Local manual shunt trip prior to placing breaker in service." The CTS Note provides a test Frequency "prior to placing the breaker in service" and procedural detail for performing the test "local manual shunt trip." The corresponding ISTS surveillance (SR 3.3.1.4) contains a note that specifies the surveillance must be performed on the RTB Bypass Breakers prior to placing the Bypass Breakers in service. The CTS surveillance requirement is revised to conform to the ISTS. This changes the CTS requirement by moving the procedural guidance for performing the surveillance (the inclusion of the local manual shunt trip) to the TS Bases associated with the surveillance.

The proposed change is acceptable because the information removed from the CTS Surveillance Requirement is not required in the TS to ensure the affected RTS instrumentation is maintained operable. The TS still requires the surveillance testing to be performed on the affected RTS Function. The procedural detail for completing the surveillance testing is more appropriately contained in the bases description of the Surveillance Requirement. The ISTS typically contains this type of information in the bases. Also, this change is acceptable because changes to the ITS Bases are controlled by the TS Bases Control Program specified in the

Administrative Controls Section of the TS. This program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because procedural details are being removed from the TS.

LA.10 *(Type 3 - Removing Procedural Details for meeting Tech Spec Requirements)* The CTS refueling CFT surveillance for the RTB Bypass Breakers specified in Table 4.3-1 is modified by a note (#13) that states "Automatic undervoltage trip." The CTS Note provides procedural guidance for performing the required test. The corresponding ISTS surveillance requirement does not contain a similar note. The CTS surveillance is revised to conform to the ISTS surveillance. This changes the CTS by moving the procedural guidance for performing the surveillance into the TS Bases associated with the surveillance.

The proposed change is acceptable because the information removed from the CTS Surveillance Requirement is not required in the TS to ensure the affected RTS instrumentation is maintained operable. The TS still requires the surveillance testing to be performed on the affected RTS Function. The procedural detail for completing the surveillance testing is more appropriately contained in the bases description of the Surveillance Requirement. The ISTS typically contains this type of information in the bases. Also, this change is acceptable because changes to the ITS Bases are controlled by the TS Bases Control Program specified in the Administrative Controls Section of the TS. This program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because procedural details are being removed from the TS.

## *Administrative Changes (A)*

A.1 In the conversion of the Beaver Valley Power Station current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering or order, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

Due to the large number of such changes, A.1 changes may not always be marked on each CTS page. Marked or unmarked, all A.1 changes are identified by a single annotation of A.1 at the top of the first page of each CTS. These changes include all non-technical modifications of requirements to provide consistency with the ISTS, including all significant format changes made to update the older NUREG-0452 Technical Specification presentation to the ISTS format. This type of change is also associated with the movement of requirements within the Technical Specifications and with changes made to the presentation of Technical Specifications requirements to combine the Unit 1 and 2 Technical Specifications into one document and highlight the differences between the Unit 1 and 2 requirements. These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS requirements.

A.2 The CTS 3/4.3.1 LCO statement, Applicability, and Actions are revised consistent with the ISTS format and presentation of this information. The CTS LCO statement is revised to eliminate the phrase "as a minimum". The LCO requirements for a system or component are the minimum requirements by definition of the term "Limiting Condition for Operation" (LCO) in 10 CFR 50.36. Therefore, the CTS term "as a minimum" is not necessary to describe the LCO requirement and has been deleted. The CTS LCO statement is revised to address the instrument Functions in ISTS Table 3.3.1-1 instead of the channels and interlocks in CTS Table 3.3-1. The Functions listed in ISTS Table 3.3.1-1 include the channels and interlocks referenced in the CTS LCO. The Applicability of CTS 3/4.3.1 is revised to refer to the ISTS Table 3.3.1-1 instead of the corresponding CTS Table. In addition, the CTS 3/4.3.1 Actions are revised consistent with the ISTS. In addition, the CTS 3/4.3.1 Action reference to Table 3.3-1 is replaced with the ISTS Condition A which states the condition of one or more Functions (on Table 3.3.1-1) with one or more inoperable channels or trains. The ISTS Condition A Action provides the reference to the applicable Action Condition for each instrument Function listed on ISTS Table 3.3.1-1. The ISTS Condition A, effectively accomplishes the same thing as the CTS Action it replaces by referencing the Table containing the applicable Actions for each Function.

The proposed changes are acceptable because they are format and presentation changes necessary to conform to the LCO, Applicability, and Action requirements in the ISTS. The proposed changes to the format and presentation of the CTS do not represent technical changes. Therefore, the proposed changes are designated administrative.

A.3 The CTS surveillance requirements 4.3.1.1.1, 4.3.1.1.2, and 4.3.1.1.3 contain the overall surveillance requirements for the RTS instrument functions. CTS 4.3 1.1.1 specifies Channel Checks, Channel calibrations and channel functional tests for the RTS Functions. CTS 4.3.1.1.2 describes the required testing for the RTS interlock functions and CTS 4.3.1.1.3 specifies response time testing be performed on the RTS Functions. In addition to the general requirements specified above, CTS Table 4.3-1 contains the specific surveillance tests associated with each RTS instrument function. CTS Table 4.3-1 is a separate Table for surveillance requirements that duplicates much of the information already presented for each RTS function in CTS Table 3.3-1. The ISTS does not include general instrument surveillance requirements that correspond to CTS 4.3.1.1.1, 4.3.1.1.2, and 4.3.1.1.3. The ISTS contains a list of all the surveillance requirements associated with each of the RTS instrument Functions. Each ISTS RTS surveillance is numbered and states a specific surveillance test requirement and performance frequency. The ISTS lists the surveillance requirements by number that are applicable to each RTS instrument function on one master Table (ISTS 3.3.1-1). The single ISTS Table 3.3.1-1 contains all the requirements for each RTS function. The list of surveillance requirements applicable to each RTS instrument function on ISTS Table 3.3.1-1 is different in presentation and format from the CTS general surveillances (4.3.1.1.1, 4.3.1.1.2, and 4.3.1.1.3) and CTS surveillance Table 4.3-1, but contains similar information regarding the surveillance requirements associated with each RTS instrument Function. The CTS surveillance requirement presentation is revised to conform to the ISTS. This changes the CTS by eliminating the general surveillance requirements 4.3.1.1.1, 4.3.1.1.2, and 4.3.1.1.3 and the separate Surveillance Table (4.3-1).

This change also includes the editorial revisions made to the corresponding Unit 1 response time testing surveillance (not shown) to change the Unit 1 CTS wording from "demonstrated" to the more common ISTS descriptive term "verified" which is also consistent with the corresponding Unit 2 surveillance.

The proposed change is acceptable because it represents a change in the format and presentation of the RTS surveillance requirements that is necessary to conform to the ISTS. The proposed changes consolidate the RTS surveillances associated with each instrument function and eliminate the repetition of requirements. Specifically, the elimination of the general surveillance requirements 4.3.1.1.1, 4.3.1.1.2, and 4.3.1.1.3 is acceptable because the technical requirements of the CTS surveillances are retained in the corresponding ISTS requirements listed in ISTS Table 3.3.1-1.

The ISTS list of surveillances for each RTS Function includes a specific response time surveillance requirement assigned to each RTS Function that has response time limits associated with it. The assignment of individual response time verification requirements to each RTS Function that has response time limits associated with it assures the general response time requirement in CTS 4.3.1.1.3 is preserved without technical changes. In addition, any technical changes to the detailed surveillance requirements listed on CTS Table 4.3-1 are identified and discussed in the markup of that CTS Table. Therefore, the elimination of the general surveillances described in 4.3.1.1.1, 4.3.1.1.2, and 4.3.1.1.3 and re-organization of the CTS surveillance requirements is designated an administrative change.

A.4 CTS surveillance 4.3.1.1.3 requires that response time testing be performed on the RTS functions and specifies that the testing be performed on "one channel per function such that all channels are verified at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip function as shown in the "Total No. of Channels" column of Table 3.3-1". The corresponding ISTS surveillance for response time testing requires that the testing be performed on a "Staggered Test Basis". The CTS is revised to conform to the ISTS. This changes the CTS by replacing the explanation of how each channel must be tested with a simple reference to the TS defined term of "Staggered Test Basis". The change to the Total Number of Channels column referenced in the CTS is discussed in another DOC that addresses the change from Total Number to Required channels. This change also includes the editorial revisions made to the corresponding Unit 1 response time testing surveillance (not shown) to change the Unit 1 CTS wording from "tested" to the more common ISTS descriptive term "verified" which is also consistent with the corresponding Unit 2 surveillance.

The proposed change is acceptable because the CTS requirement explaining how the response time of each channel should be verified is the same as verifying the channel response time on a staggered basis as defined in the ISTS. The proposed change is consistent with the format and presentation of this requirement in the ISTS. The ISTS requirements reference defined terms instead of repeating this information in each surveillance. The proposed change does not introduce a technical change to the CTS requirements. The specified interval remains the same. The proposed change simplifies the presentation of the surveillance requirement without changing the intent. Therefore, the proposed change is designated administrative.

A.5 Unit 2 only. Unit 1 does not have footnote 1. CTS Surveillance 4.3.1.1.1 requires that the RTS instrument functions be demonstrated operable in accordance with the requirements of Table 4.3-1. The CTS surveillance is modified by footnote 1. Footnote 1 states "For the automatic trip logic, the surveillance requirements shall be the application of various simulated input combinations in conjunction with each possible interlock logic state and verification of the required logic output including, as a minimum, a continuity check of output devices." The corresponding ISTS RTS surveillance requirements do not include a similar footnote. In the ISTS, the corresponding surveillance test requirements are identified in the defined terms of Section 1.0 of the TS. Individual ISTS surveillance requirements reference the defined terms of TS Section 1.0 as necessary. The CTS is revised to conform to the ISTS. This changes the CTS by moving the description of the test requirements for automatic trip logic to the definition section of the TS. The specific definition that defines this type of testing is the ISTS ACTUATION LOGIC TEST. Additionally, the CTS surveillance for automatic trip logic is revised to reference the performance of an ACTUATION LOGIC TEST (as defined in Section 1.0 of the TS).

The proposed change is acceptable because the change only re-organizes the existing CTS requirements to conform to the ISTS. The placement of the affected test requirements in a defined term in Section 1.0 of the TS does not introduce a technical change to the CTS and retains the required testing within the TS. Therefore, the proposed change is designated administrative.

A.6 The column headings for Functional Unit, Applicable Mode, and Action in CTS Table 3.3-1 are revised to conform to the corresponding column headings in ISTS Table 3.3.1-1. In the ISTS, the corresponding column headings are Function, Applicable Mode or Other Specified Condition, and Condition.

The proposed change is acceptable because the change in column headings on the RTS table represents a change in presentation only that is necessary to conform to the ISTS. Changing Functional Unit to Function is a change in title only that does not introduce a technical change to the CTS requirements. Adding "or other specified condition" to the CTS column heading for Applicable Mode provides a clarification that encompasses the CTS use of footnotes to modify the applicable Modes with additional conditions. For example, the Applicable Mode for CTS Functional Unit 1 is modified by Footnote 3 which places the following condition on certain Modes; "with the reactor trip system breakers in the closed position and the control rod drive system capable of rod withdrawal." As such, the addition of "or other specified condition" to the CTS Applicable Mode column is consistent with the CTS use of notes to modify the applicability with additional conditions and does not represent a technical change to the CTS. Changing the CTS Table 3.3-1 column heading "Action" to "Condition" is necessary due to the format of ISTS Actions. The ISTS Actions are expressed in three separate parts i.e., a specific Condition (e.g., one channel inoperable) with an associated Required Action (e.g., place the channel in trip) and a Completion Time for that Action (e.g., 6 hours). Although the CTS Actions contain the separate components used in the ISTS example above, in the CTS, the components are combined together in a paragraph or two and simply labeled "Action". These components are physically separated in the ISTS presentation of Actions. The separation of these components provides better human factoring of the TS and allows the user to quickly identify the applicable condition and determine the requirements associated with it. As such, the change from "Action" heading" to "Condition" heading is purely one of format and presentation of the same information.

The proposed changes do not involve technical changes to the CTS and are designated administrative changes.

A.7 The CTS Table 3.3-1 table heading titled "Total Number of Channels" is revised to be "Required Channels" consistent with the corresponding ISTS Table 3.3.1-1 Table headings. In addition, the Minimum Channels Operable column of CTS Table 3.3-1 is deleted consistent with the content of the corresponding ISTS Table 3.3.1-1.

The proposed change is acceptable because the revisions described above do not result in technical changes to the number of instrument channels required operable or the applicable Actions when the required channels are not met. All Actions for an inoperable instrument channel in the ISTS key off the Required Channels specified for the affected function. The new ISTS Conditions assigned to each Instrument Function will specify the appropriate action when one or more "Required" instrument channels are inoperable. The minimum channels column used in the CTS to identify the number of operable channels for which continued operation is permissible is no longer used or required in the TS. The ISTS Actions encompass the concept of the minimum required channels, i.e., the plant would be required to be placed in a Mode or Condition outside the Applicable Mode when the minimum number of channels for continued operation is not met. The ISTS Actions accomplish this without a specific reference to the minimum required channels. As such the proposed changes described above do not introduce a technical change to the CTS requirements. In addition, any technical changes to the CTS Actions associated with the RTS instrument functions are identified in the markup of those Actions and addressed in the DOCs associated with the changes to the CTS Actions. This DOC is intended to address the reformat of the CTS Table 3.3-1 to conform to the corresponding ISTS Table 3.3.1-1. Therefore, this change is designated administrative.

A.8 The CTS Table 3.3-1 Allowable Value column title is revised by the addition of Unit specific designations. The corresponding ISTS Table does not include Unit specific designations. However, the BVPS specific implementation of the ISTS includes both Unit 1 and Unit 2 requirements in one set of TS. As each BVPS Unit may have different setpoints, the resulting BVPS ITS Table 3.3.1-1 is proposed with separate Unit 1 and Unit 2 Allowable Value columns for each RTS function.

The proposed change is acceptable because the CTS Allowable Values are not changed. The proposed change merely combines the Unit 1 and Unit 2 Allowable Values into the same ITS RTS Instrument Function Table. As such, the proposed change is designated administrative.

A.9 CTS Functional Unit 6b (Source Range Neutron Flux without rod withdrawal capability) on CTS Table 3.3-1 is modified by two footnotes (8 and 9). CTS footnote 8 states that "Alternate detectors may only be used for monitoring purposes Without Rod Withdrawal Capability until detector functions are modified to permit equivalent alarm and trip functions." Footnote 8 applies to Unit 2 only. CTS Unit 2 footnote 9 (footnote 8 for Unit 1) states "In this condition, source range Function does not provide reactor trip but does provide indication." In addition, CTS Table 4.3-1 contains Note 15 which modifies the surveillance requirements associated with "Alternate" neutron flux detectors used for indication purposes. CTS Functional Unit 6b specifies requirements for source range indication only and contains no reactor trip requirements. This CTS Function is assigned a specific Action (5) that is associated only with this RTS Function. The Action is modified by footnote 7 which is also specific to this RTS Function. The ISTS RTS requirements do not address indication only functions. The corresponding ISTS RTS TS contains requirements for reactor trip instrumentation only. The CTS is revised consistent with the ISTS. This changes the CTS by moving the source range neutron flux instrument indication requirements (including all associated notes form Tables 3.3-1 and 4.3-1 and Action 5) out of the RTS TS and into a separate source range indication TS (ITS 3.3.8).

The proposed change is acceptable because the CTS requirements are moved within the TS without introducing a technical change to the requirements. The affected CTS requirements do not address an RTS function and do not belong in the RTS TS. The ISTS contains a generic Boron Dilution Protection System (BDPS) LCO, ISTS 3.3.9. Although the BDPS system addressed by ISTS 3.3.9 is not part of the BVPS design, it contains some requirements that are similar to the BVPS CTS source range indication requirements. As such, ISTS 3.3.9 (BVPS ITS 3.3.8) will be revised to address the CTS source range indication requirements so that they may continue to be specified in the TS separate from the reactor trip system requirements. The proposed change makes the CTS more closely conform to the ISTS presentation of these requirements. The proposed change only moves requirements within the TS and is therefore, designated administrative.

A.10 Unit 2 only. The * footnote in CTS Table 3.3-1 provides an explanation of the acroymn RTP ( Rated Thermal Power) used in some of the Allowable Values specified in the Table. The corresponding ISTS Table 3.3.1-1 does not include this footnote to explain RTP. The CTS is revised to conform to the ISTS. This changes the CTS by eliminating the footnote explanation of the acroymn RTP from CTS Table 3.3-1. In addition, this change addresses the removal of the * from each place it is used in CTS Table 3.3-1 to reference the RTP footnote.

The proposed change is acceptable because the change is necessary to conform to the ISTS format and presentation conventions. In the ISTS, the term Rated Thermal Power (including the acoynm RTP) is a defined term in Section 1.0 of the TS. The defined term, including acroynm, is explained once in the front matter of the ISTS. The ISTS then utilizes the acroynms of defined terms throughout the TS without explaining the acroynms each time they are used. The proposed change does not introduce a technical change to the CTS and is made to conform to the ISTS format and presentation conventions for defined acroynms. Therefore, the proposed change is designated administrative.

A.11 The CTS Table 3.3-1 Source Range Neutron Flux Function title "With Rod Withdrawal Capability" is deleted. The corresponding ISTS Function does not use this Function title to identify the source range instrumentation. In the ISTS, this information is contained in the plant condition specified in the Applicability for the Source Range RTS Function. The CTS is revised consistent with the ISTS. This changes the CTS by eliminating a separate reference to the specified plant condition of the Applicability for this RTS Function. The plant condition of "with rod withdrawal capability" continues to be specified in the Applicability for Modes 3, 4, and 5 (CTS Note 3).

The proposed change is acceptable because it is necessary to conform to the ISTS presentation of this information and because it does not introduce a technical change to the CTS requirements. The requirement for the source range instrumentation to be operable with rod withdrawal capability is retained in the Applicability requirements for the source range instrumentation consistent with the location of this information in the ISTS. The affected CTS Function title is a specific plant condition for which the RTS function must be applicable and therefore, is part of the Applicability for the Function. As such, the proposed change only affects the presentation of the RTS requirements and conforms to the ISTS. The proposed change is designated administrative as it does not introduce a technical change to the CTS requirements.

A.12 Unit 2 only. The Allowable Value for CTS Functional Unit 9 (Pressurizer Pressure-Low) on Table 3.3-1 is modified by a ** footnote that specifies the time constants associated with the Allowable Value. In addition to the time constants (which are part of the Allowable Value) the footnote also specifies that "Channel calibration shall ensure that these time constants are adjusted to those values." The corresponding ISTS Functions in CTS Table 3.3.1-1 do not include footnotes with requirements for the channel calibration of the function. The ISTS includes the requirement to verify the time constants associated with a Function in the Channel Calibration Surveillance Requirement for that Function. The ISTS includes notes in the channel calibration surveillance that clarify or modify the requirements for that surveillance. The CTS is revised to conform to the ISTS. This changes the CTS by moving the note affecting channel calibration from the list of functions on CTS Table 3.3-1into the RTS channel calibration surveillance requirement.

The proposed change is acceptable because the change is necessary to conform to the ISTS presentation of this information, the change does not result in a technical change to the CTS requirement, and because the CTS requirement is retained within the TS. The proposed change simply re-organizes the CTS requirement consistent with the ISTS. As the proposed change does not introduce a technical change to the CTS, it is designated administrative.

A.13 The CTS Loss of Flow Functions 12 and 13 on CTS Table 3.3-1 have been combined into one Function, ITS Function 10, Reactor Coolant Flow - Low, consistent with the ISTS. CTS Function 12, is effective above the P-8 interlock (30% RTP) and provides a reactor trip with low flow in a single RCS loop. CTS Function 13 is effective above the P-7 interlock (10% RTP) and below the P-8 interlock (30% RTP) and provides a reactor trip with low flow in two RCS loops. However, these CTS Functions utilize the same instrumentation that is required operable from 10% to 100% RTP. As such, the corresponding ISTS Function is presented as a single RTS Function, that requires the affected instrument channels to be operable above the P-7 interlock (10% RTP). The CTS is revised to be consistent with the ISTS. This changes the CTS by combining Functions 12 and 13 and eliminating essentially redundant information from CTS Table 3.3-1.

The proposed change is acceptable because it is necessary to conform to the presentation of this information in the ISTS and because it does not introduce a technical change to the CTS requirements. The combination of the two separate RTS functions into one Function is possible because the instrumentation used for each of the affected CTS functions is the same. In addition, the applicable Action and setpoints are also the same. In the CTS, this instrumentation was divided into two separate functions to better describe the operation of the function above and below the P-8 permissive (one or two loop trip). In the ISTS, this description of channel operation is retained in the bases description for this RTS Function (see associated LA DOC). The ISTS simplifies the presentation of this RTS function and retains the essential requirement that the instrument channels be operable above P-7 or the appropriate Action must be taken. Regardless of the one or two RCS loop trip operation of the Function, all channels are required operable above the P-7 interlock. The affected channels, including Allowable Values, are not changed and continue to be required operable above P-7 the same as the CTS. The proposed change only simplifies the presentation of these requirements. The proposed change is designated administrative because it does not introduce a technical change to the CTS requirements.

A.14 The CTS Table 3.3-1 contains Function 21 for the Reactor Trip Breakers (RTBs). This CTS function includes Actions specifically for the undervoltage and shunt trip mechanisms associated with the RTBs as well as Actions for an RTB inoperable for other reasons. The corresponding ISTS Table 3.3.1-1 contains separate line item Functions for the RTBs and the RTB undervoltage and shunt trip mechanisms. The ISTS assigns the specific Actions for the undervoltage and shunt trip mechanisms to that Function line item and the Actions applicable to the RTB Function to the RTB Function line item. The CTS is revised to conform to the ISTS. This changes the CTS by creating a new separate Function line item for undervoltage and shunt trip mechanisms in CTS Table 3.3-1. This Doc addresses the change that creates a separate line item function for the RTB undervoltage and shunt trip mechanisms. Other changes to the RTS RTB Functions are addressed in other DOCs.

The proposed change is acceptable because it is necessary to conform to the ISTS presentation of this information and because the separation of these items into two RTS Functions does not introduce a technical change to the CTS requirements. The new RTB undervoltage and shunt trip mechanism Function is required operable in the same Modes as before and if inoperable requires the same Actions as before. The separation of these RTB Functions serves to clarify the different Action Condition and Completion Time applicable for the RTB undervoltage and shunt trip mechanisms. The proposed change only represents a change in the presentation of this information. As such, the proposed change is designated administrative.

A.15 The CTS allowable value for the RTS P-13 Function is expressed as "% RTP turbine first stage pressure equivalent". The corresponding ISTS P-13 Function is simply expressed as "% turbine power". The CTS is revised to conform to the ISTS. This changes the CTS by expressing the P-13 function allowable value as % turbine power instead of % RTP turbine first stage pressure equivalent.

The proposed change is acceptable because the ISTS allowable value is a simplified form of the CTS allowable value and does not represent a technical change to the CTS. In addition, the CTS explanation that the turbine power is "RTP turbine first stage pressure equivalent" is being retained in the corresponding bases discussion of this Function to further explain the measured parameter. The P-13 Function is a measure of turbine power used together with a measure of reactor power (P-10) to provide the P-7 interlock function (low power permissive). At approximately 10% RTP or turbine power the P-7 interlock enables several RTS Functions. As such, the ISTS naming convention for the P-13 interlock allowable value is acceptable and more clearly labels the parameter as related to turbine power. The proposed change is designated administrative as the change is not intended to introduce a technical change to the CTS.

A.16 CTS Note 3 in Table 3.3-1 states the following; " With the reactor trip system breakers in the closed position and the control rod drive system capable of rod withdrawal." This CTS Note is used to modify the Applicability of RTS functions needed to mitigate the consequences of rod withdrawal events. The corresponding ISTS Note (a) states; " With Rod Control System capable of rod withdrawal or one or more rods not fully inserted." The CTS is revised to conform to the ISTS. This changes the CTS by removing the reactor trip breakers (RTBs) from the applicability requirement and adding the requirement to the applicability of whenever one or more rods are not fully inserted. This DOC is intended to address the elimination of the RTBs from the CTS note.

The CTS Applicability requires the associated RTS Functions to be operable when the possibility of an inadvertent or uncontrolled rod withdrawal accident exists. The associated RTS Functions provide reactor trip actuations to mitigate the consequences of a rod withdrawal event. In order to assure the availability of the required protection Functions the CTS Applicability requires the associated RTS Functions to be operable whenever the RTBs are closed <u>and</u> when the rod control system is capable of rod withdrawal. However, the possibility of rod withdrawal may be precluded if the rod control system is not capable of rod withdrawal (the RTBs must be closed for the rod control system to be capable of rod withdrawal). The note need only specify that the rod control system is capable of rod withdrawal to adequately address the condition where the RTS Functions are required operable. A specific reference to the RTBs in the note is not required as the capability of the rod control system to withdraw rods is dependent on the RTB breaker position. As such, this portion of the proposed change to CTS Note 3 is acceptable as it simplifies the CTS note and does not introduce a technical change to the intent of the CTS note. As the proposed change does not introduce a technical change to the CTS, it is designated administrative.

A.17 The CTS Actions specify "With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement...." or "With the number of channels OPERABLE one less than required by the Total Channels OPERABLE requirement...." These CTS Actions are based on the minimum channels operable or total channels specified in CTS Table 3.3-1 for each RTS Function. The ISTS does not contain a "minimum channels operable" or "total channels" requirement. The ISTS uses the single term "Required" channels or trains for all RTS Functions. In the ISTS, all Actions are based on one or more "Required" channels or trains inoperable. The ISTS Required Channels is equivalent to the CTS Total Channels requirement. The CTS is revised to conform to the ISTS. This changes the CTS by eliminating the Action references to the Minimum or Total channels operable and simply specifying "one channel inoperable". In some cases, the ITS Action Conditions are specific to a single RTS Function and may contain the Function name (e.g., one Turbine Trip channel inoperable). In addition, the ISTS Action Conditions may identify the RTS Function by "train" instead of by "channel" where applicable (e.g., the automatic trip logic RTS Function is not a channel and is referred to by trains of automatic trip logic).

The proposed change is acceptable because the number of channels (or trains) on which the CTS Actions are based is not changed. The ISTS Required Channels is equivalent to the CTS Total Channels requirement. In cases where the CTS Action is based on the Minimum Channels requirement, the Minimum Channels requirement is equivalent to the CTS Total Channels Requirement. Therefore, the ISTS use of Required Channels simplifies the CTS presentation of this information without introducing a technical change to the number of channels used for initiating an Action requirement. The use of the term trains in the ISTS for certain Functions is also acceptable as it more accurate identifies the associated RTS Functions that are designed with train A and train B systems and that are technical not instrumentation channels (e.g., automatic actuation logic).

The CTS Minimum Channels requirement is also used within an Action statement where the continued operation of the plant is permitted "providing the Minimum Channels operable requirement is met". The ISTS does not use this convention to indicate where continued operation is permitted. If an Action exists in the ISTS for a specific Condition, operation may continue in accordance with that Action. However, if an Action is not included in the ISTS for a specific condition (e.g., an RTS Function with two required channels inoperable), LCO 3.0.3 must be entered and the plant placed in a condition where the RTS Function is no longer required. Therefore, the proposed change to eliminate the phrase "operation may continue" from the CTS Actions is also acceptable.

The ISTS format, presentation and conventions of use have eliminated the need for the CTS Action references to "Total Channels" or "Minimum Channels" and such phrases as "operation may continue" without introducing technical changes to the number of channels required to be operable by the RTS TS or the conditions under which continued operation is permitted. As the proposed changes involve revisions to the format and presentation of the CTS Action requirements without introducing technical changes to those requirements, the changes are designated administrative.

A.18 CTS Action 2, assigned to the Power Range Neutron Flux RTS Functions 2, 3, and 4 in CTS Table 3.3-1, is comprised of two parts (a and b). CTS Action 2a addresses the Power Range High Neutron Flux channels and CTS Action 2b addresses all the other Power Range Neutron Flux channels. CTS Action 2 is modified by footnote 4, applicable to both parts of the Action and footnote 5 which is applicable only to CTS Action 2a. The corresponding ISTS Actions are contained in Conditions D and E. The ISTS Conditions contain the same notes as the CTS but in the ISTS Note format with the Actions not as footnotes. ISTS Condition D corresponds to CTS Action 2a for the Power Range Neutron Flux High channels and ISTS Condition E corresponds to CTS Action 2b for the other Power Range Neutron Flux channels. The CTS is revised to conform to the ISTS presentation of these Action requirements. This changes the CTS by dividing CTS Action 2 into separate ISTS Action Conditions (D and E) and reformatting the CTS Actions into the ISTS format. The technical changes made to CTS Action 2 are addressed in the DOCs associated with that CTS Action. This DOC addresses the presentation changes to CTS Action 2.

The proposed change is acceptable because no technical changes are being made to CTS Action 2. The CTS Action is simply reformatted into the separate ISTS Action conditions described above. As such, the proposed change is designated administrative.

A.19 The Source Range RTS Function in CTS Table 3.3-1 is assigned Action Statement 4. CTS Action statement 4 is comprised of parts a, b, and c. CTS Action 4a is identified as applicable to Mode 2 below P-6, CTS Action 4b is identified as applicable to Modes 3, 4, and 5, and CTS Action 4c is identified as applicable to Mode 2 below P-6 and Modes 3, 4, and 5. The Corresponding ISTS Action Conditions are H, I, and J. ISTS Condition H is identified as applicable to Mode 2 below P-6, ISTS Condition I is identified as applicable to Mode 2 below P-6 and Modes 3, 4, and 5, and ISTS Condition J is identified as applicable to Modes 3, 4, and 5. The CTS Actions are revised to conform to the ISTS Action Conditions. This changes the CTS by reformating the single CTS Action statement 4 into 3 separate ISTS Action Conditions. This DOC is only intended to address the reformat of the CTS Action into separate ISTS Conditions. Any technical changes to the CTS Action are addressed in other DOCs.

The proposed change is acceptable because the separate ISTS Action Conditions correspond directly to parts a, b, and c of CTS Action 4 and the proposed change only represents a change in format and presentation of the CTS Action. The Actions associated with the Source Range RTS Function remain essentially the same. The ISTS Table 3.3.1-1 format assigns the Action Conditions by Applicable Mode such that ISTS Conditions H and I are assigned to Mode 2 below P-6 and ISTS Conditions I and J are assigned to Modes 3, 4, and 5. The assignment of these Conditions in the ISTS Table 3.3.1-1 effectively corresponds to the CTS assignment of Action Statement 4 parts a, b, and c. As the proposed change only involves the format and presentation of the CTS requirements it is designated administrative.

A.20 CTS Action 7b provides the allowance that "the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.1.1.1." The corresponding ISTS Action Condition Note states that "the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels." The CTS is revised to conform to the ISTS. This changes the CTS by eliminating the reference to Specification 4.3.1.1.1 from the CTS Action 7b.

CTS Specification 4.3.1.1.1 states the surveillance requirements applicable to the RTS Functions. The surveillance requirements of 4.3.1.1.1 are such that they may have to be performed on the affected RTS instrumentation while operating in the applicable Mode where the RTS Function is required operable. Surveillance testing of instrument channels requires that the channel be placed in the trip condition at some point during testing to verify correct channel operation. If the affected RTS Function already has an inoperable channel in the trip condition, placing a second channel in trip for verification during testing may result in a reactor trip. Failure to perform the required surveillances within the specified interval plus any applicable extensions would require that the affected RTS channel be declared inoperable (per the rules of TS). Declaring a channel inoperable due to a missed surveillance will also result in a plant shutdown if another RTS channel in that Function was already inoperable (LCO 3.0.3 applies to two inoperable channels in the same RTS Function). Therefore, the CTS contains the allowance to bypass inoperable channels for a limited time to allow the required surveillance testing to proceed on the remaining operable channels in an RTS Function and thus to allow for continued operation of the plant.

The proposed change is acceptable because it accomplishes the same thing as the CTS requirement. The inclusion of a reference to the specific surveillance (4.3.1.1.1) is not required to ensure the remaining channels of an RTS Function are properly tested with the inoperable channel bypassed. The ISTS Action Note accomplishes this task with a simpler presentation and without introducing a technical change to the CTS requirements. The proposed change is designated administrative because no technical change is made to the CTS requirements.

A.21 CTS Action 7 requires that the affected RTS channel be placed in the trip condition in 6 hours. CTS Action 7 is common to several RTS Functions. The corresponding ITS Action Conditions (E, K, and L) contain the same Action to place the channel in trip in

6 hours plus an additional default Action that is applicable if the Action to place the channel in trip can not be met. The ISTS default Action requirement is based on the applicable Mode of the RTS Function and serves to remove the plant from the applicable Mode of the affected RTS Function if the Action to place a channel in trip is not met. As such, the corresponding RTS Functions in the ISTS have different Action Conditions assigned to them depending on the applicable Mode of the RTS Function. The default Action of ISTS Condition E requires that the plant be placed in Mode 3 and is applicable to RTS Functions that are required operable in Modes 1 and 2. The default Action of ISTS Condition K requires that the power be reduced to < P-7 and is applicable to RTS Functions that are required operable at power levels ≥ P-7. The default Action associated with ITS Condition L requires that the power be reduced to < P-9 and is applicable to the Turbine Trip RTS Functions that are required operable at power levels ≥ P-9. The CTS action 7 is split to conform to ISTS Actions E, K, and L. This changes the CTS by assigning different Actions to the RTS Functions depending on the applicable Mode of the Function. The specific technical changes to CTS Action 7 to convert to ISTS Conditions E and K are discussed in the DOCs associated with Action 7. This DOC is only intended to address the presentation difference that results from the technical changes introduced by the new ISTS Conditions.

The proposed change assigns specific Actions to each RTS Function that are tailored to better fit the Mode of applicability for each of the Functions. The proposed change is acceptable because the change is necessary to conform to the ISTS format and presentation of Action Conditions and because the change addressed in this DOC does not include a technical change to the CTS Actions. As this change addresses the format and presentation of the Actions it is designated administrative.

A.22 CTS Action 1 provides the allowance that "one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.1.1.1 provided the other channel is operable." The corresponding ITS Action Condition M Note states that "one train may be bypassed for up to 4 hours for surveillance testing provided the other train is operable." The CTS is revised to conform to the ITS Condition Note. This changes the CTS by eliminating the reference to Specification 4.3.1.1.1 from the CTS Action 1. The change in terminology from channel to train is addressed in another DOC.

CTS Specification 4.3.1.1.1 states the surveillance requirements applicable to the RTS Functions. The surveillance requirements of 4.3.1.1.1 may have to be performed on the RTS instrumentation while operating in the applicable Mode where the RTS Function is required operable. Surveillance testing of instrument channels or trains requires that the channel or train be placed in the trip condition at some point during testing to verify correct channel operation. In the case of RTS inputs such as the SI input, the input is a train A and train B function such that a trip from either train would actuate a reactor trip. Therefore, the CTS contains the allowance to bypass a channel for a limited time to allow the required surveillance testing to be performed without causing a reactor trip.

The proposed change is acceptable because it accomplishes the same thing as the CTS requirement. The inclusion of a reference to the specific surveillance (4.3.1.1.1) is not required to ensure the RTS Function is properly tested without causing a reactor trip. The ISTS Action Note accomplishes this task with a simpler presentation and without introducing a technical change to the CTS requirements. The proposed change is designated administrative because no technical change is made to the CTS requirements.

A.23 CTS Action 40b provides the allowance that "one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1.1, provided the other channel is operable." The corresponding ITS Action Condition N Note 1 states that "one train may be bypassed for up to 2 hours for surveillance testing provided the other train is operable." The CTS is revised to conform to the ITS Condition Note. This changes the CTS by eliminating the reference to Specification 4.3.1.1.1 from the CTS Action 40b. The change in terminology from channel to train is addressed in another DOC.

CTS Specification 4.3.1.1.1 states the surveillance requirements applicable to the RTS Functions. The surveillance requirements of 4.3.1.1.1 may have to be performed on the RTS instrumentation while operating in the applicable Mode where the RTS Function is required operable. Surveillance testing of instrument channels or trains requires that the channel or train be placed in the trip condition at some point during testing to verify correct channel operation. The CTS and ITS Actions are applicable to the reactor trip breakers (RTBs). In the case of the RTBs a trip from either RTB would actuate a reactor trip. Therefore, the CTS contains the allowance to bypass a channel for a limited time to allow the required surveillance testing to be performed without causing a reactor trip.

The proposed change is acceptable because it accomplishes the same thing as the CTS requirement. The inclusion of a reference to the specific surveillance (4.3.1.1.1) is not required to ensure the RTS Function is properly tested without causing a reactor trip. The ISTS Action Note accomplishes this task with a simpler presentation and without introducing a technical change to the CTS requirements. The proposed change is designated administrative because no technical change is made to the CTS requirements.

A.24 CTS Action 40 contains different Action requirements for the reactor trip breakers (RTBs) and for the undervoltage and shunt trip features that comprise the diverse trip mechanisms of the RTBs. The corresponding ISTS action Conditions N and Q separate the Actions applicable to the RTBs and the undervoltage and shunt trip mechanisms into two Action Conditions (Condition N for one inoperable RTB and Condition Q for one trip mechanism inoperable for one RTB. In addition, the CTS Action 40 allowances for bypassing the RTBs are retained as two notes in ITS Action Condition N for the RTBs. The CTS is revised to conform to the ISTS presentation of these Action requirements. This changes the CTS by separating the Actions for the RTBs from the Actions for the individual trip mechanisms. This DOC is only intended to address the re-organization of the CTS Action to conform to the ISTS. The other DOCs associated with CTS Action 40 address other changes to that Action.

The proposed change is acceptable because it is necessary to conform to the ISTS and because it provides a more clear set of Actions by separating the CTS Action requirements into two separate Action Conditions. In addition, the proposed change is acceptable because it does not introduce a technical change to the CTS requirements. The proposed change only involves revising the format and presentation of the Action requirements and Notes within the Actions. As such, the proposed change is designated administrative.

A.25 Unit 1 only. The Unit 1 CTS RTS Function 14, Steam Generator (SG) Water Level - Low - Low, is modified by reference to a "Loop Stop Valves Open" permissive. The corresponding ISTS and Unit 2 CTS RTS Functions do not contain a similar reference. The Unit 1 CTS is revised to conform to the ISTS and Unit 2 CTS. This changes the Unit 1 RTS Function 14 by deleting the reference to the "Loop Stop Valves Open" permissive.

The Unit 1 RTS Function for low SG level trip was originally designed with a permissive interlock with the RCS loop stop valves. The original intent of this design was to defeat the SG low level trip for a SG when the associated RCS loop was removed from service. This design would permit the water level in a SG removed from service to be below the reactor trip setpoints without actuating a reactor trip and allow continued plant operation with only two RCS loops in service. BVPS never licensed two loop operation and the permissive interlock with the RCS loop stop valves was removed by a plant design change. In addition, the CTS and proposed ITS require that all three RCS loops be in operation when the SG Water level RTS trip Function is required operable. As such, the reference to the permissive interlock with the RCS loop stop valves no longer has a technical impact in the TS. The proposed change to delete the reference to this permissive interlock from the Unit 1 RTS TS is acceptable because the permissive interlock with the RCS loop stop valves is no longer part of the Unit 1 design and because the TS require that all three RCS loops be in service when this RTS Function is required operable. The proposed change makes the CTS conform more closely to the current plant design and does not result in a technical impact to the CTS requirements. As such, the proposed change is designated administrative.

A.26 The Unit 1 and Unit 2 BVPS Units have different Turbine Trip RTS Functions. The Unit 1 Function 18.a is Auto Stop Oil Pressure. The Unit 2 Function 18.A is Emergency Trip Header Low Pressure. The corresponding ISTS Turbine Trip Function simply lists Low Fluid Oil Pressure. These Unit 1 and Unit 2 CTS RTS Functions are revised into a single RTS line item similar to the ISTS. This changes the CTS by combining the Unit 1 Auto Stop Oil Pressure and the Unit 2 Emergency Trip Header Pressure under one RTS "Low Pressure" Turbine Trip Function item on ITS Table 3.3.1-1.

The Unit 1 and Unit 2 Turbine Trip RTS Functions monitor and actuate from different turbine parameters with different setpoints. Although the parameter monitored for this Function is different for each Unit, the RTS Function is the same, i.e., provide the necessary turbine trip signal to the RTS to actuate a reactor trip. The proposed BVPS ITS consists of a single TS for both Units. As the number of instrument channels, Applicable Modes, and surveillance requirements are the same, these two RTS Functions may be combined into a single RTS Function in ITS Table 3.3.1-1 without introducing a technical change to the CTS requirements. The proposed BVPS ITS Table 3.3.1-1 contains separate Allowable Value columns for Unit 1 and Unit 2. Therefore, the applicable CTS requirements for these RTS Functions may be retained in a single line item on BVPS ITS Table 3.3.1-1 that has a Unit 1 Allowable Value and a Unit 2 Allowable Value. The proposed change is acceptable because it does not introduce a technical change to the CTS requirements and because it is necessary to combine the different Unit Functions into a single TS. As the proposed change only represents a change in the format and presentation of the CTS, it is designated as administrative.

A.27 Not used.

A.28 The CTS RTS TS contains a separate Table (4.3-1) that contains the surveillance requirements associated with each RTS Function. In addition to the RTS Function surveillance requirements, CTS Table 4.3-1 contains a list of the RTS Functions and the Applicable Modes for each RTS Function. Certain Table 4.3-1 Notes are also specifically associated with the Applicable Modes. The List of Functions and Applicable Modes in CTS Table 4.3-1 is essentially redundant to the list of RTS Functions and Applicable Modes in CTS Table 3.3-1. The purpose of CTS Table 4.3-1 is to clearly specify the surveillance requirements associated with each RTS Function. The repetition of the RTS Function titles and Applicable Modes in Table 4.3-1 is for convenience and ease of identification. The repetition of this information on CTS Table 4.3-1 is not intended to introduce technical changes to the corresponding requirements in CTS Table 3.3-1. In order to simplify and consolidate the RTS Function requirements, the corresponding ISTS for RTS presents all the RTS requirements in a single Table (3.3.1-1). ISTS Table 3.3.1-1 contains a single list of RTS Functions and a single list of Applicable Modes for each Function. The CTS is revised to conform to the ISTS. This changes the CTS by consolidating CTS Tables 3.3.1 and 4.3.1 into a single Table (ITS 3.3.1-1).

The essential technical content of Table 4.3-1 (the surveillance requirements) is moved into the consolidated ITS Table. This DOC is intended to address the consolidation of the two CTS Tables and addresses the redundant list of Function titles and Applicable Modes (including any Notes) for which the changes have already been described in the markup of CTS Table 3.3-1. Other DOCs address any technical differences between the consolidated ISTS Table and CTS Table 4.3-1.

The proposed change is acceptable because it conforms to the ISTS and because it does not introduce technical changes to the CTS requirements. The proposed change consolidates the RTS requirements in one table. The RTS information addressed by this DOC is redundant to the information contained in CTS Table 3.3-1. Technical changes to the RTS requirements affected by this DOC have already been identified and discussed in the markup of CTS Table 3.3-1. As such, the proposed change only affects the format and presentation of the RTS requirements and does not introduce technical changes to those requirements. As the proposed change involves only the format and presentation of the RTS requirements, it is designated administrative.

A.29 CTS Table 4.3-1 contains the surveillance requirements for the RTS Functions. The CTS specifies a Channel Functional Test for certain RTS Functions. In place of the Channel Functional Test, the ISTS specifies the following surveillance tests depending on the Function:

Channel Operational Test (COT)

Trip Actuating Device Operational Test (TADOT), and

Actuation Logic Test

The CTS is revised to replace the single Channel Functional Test requirement with the 3 new ISTS test requirements. The CTS Channel Functional Test as well as the new ISTS surveillance tests are defined terms specified in Section 1.0 of the TS. The addition of the new ISTS defined terms for surveillance testing and the changes to the CTS Channel Functional Test are addressed in the changes made to TS Section 1.0, Definitions. Any technical changes to the requirements for individual RTS Functions will be addressed in the detailed markup of those requirements in CTS Table 4.3-1.

This DOC is intended to address the replacement of the Channel Functional Test requirement in Table 4.3-1 with one of the 3 new ISTS test terms.

The ISTS COT is intended to address those RTS instrument channels that encompass equipment intended to process the source signal (e.g., convert current input to voltage output). The ISTS TADOT is intended to address those RTS instrument channels that consist of a more simple input such as a manual switch or other device that simply opens or closes contacts in the RTS. The ISTS Actuation Logic Test is intended to address the actuation logic in the RTS where the individual instrument channel inputs are combined to produce the required logic output. The CTS Channel Functional Test is currently utilized for testing all these different RTS Functions. Although the RTS Functions can be adequately tested using a single general test definition such as the Channel Functional test, some interpretation of the Channel Functional Test definition is necessary to adequately address the different RTS Functions. The specific ISTS test definitions provide accurate descriptions of the testing that is actually performed on each type of RTS Function.

The proposed change is acceptable because the new test terms contain specific test requirements applicable to the RTS Functions that more accurately describe the required testing for each Function. The proposed change does not introduce a technical change to the method by which each type of Function is currently tested. The proposed change only results in the use of defined terms that more accurately describe the current test method for each RTS Function. As such, the RTS Functions continue to be tested in a similar manner as before but the testing being performed is more consistent with the TS defined terms being used to specify the required testing. The proposed change is designated administrative because it does not introduce technical changes to the surveillance testing currently performed for each RTS Function.

A.30 CTS surveillance 4.3.1.1.3 requires that "The REACTOR TRIP SYSTEM RESPONSE TIME of each reactor trip function shall be demonstrated to be within its limit...." The CTS surveillance is a general requirement that is interpreted to be applicable to those RTS Functions with response time limits assumed in the safety analyses. The list of RTS Functions with response time requirements that must be verified is maintained outside of the TS in the Licensing Requirements Manual (LRM). The ISTS provides a specific response time surveillance requirement that is assigned to each RTS Function that has required response time limits. The CTS is revised to conform to the ISTS. This changes the CTS by assigning a response time surveillance requirement to each individual RTS Function that has a required response time limit identified in the LRM.

The proposed change is acceptable because it more accurately identifies the RTS Functions with response time requirements and assures each of those Functions are assigned the response time surveillance requirement. The proposed change revises the presentation of the requirement to perform response time verification but does not change the intent of the requirement. In addition, the proposed change does not change the RTS Functions that are tested, the method of testing, or the frequency of testing. As such, the proposed change does not introduce any technical changes to the CTS. Therefore, the proposed change is designated administrative.

A.31 The CTS surveillances for the Safety Injection Input from ESF and the RCP Breaker Position RTS Functions specified on Table 4.3-1 require a Channel Functional Test

(CFT) to be performed once per refueling (18 months). The corresponding ISTS surveillance for these RTS Functions requires a Trip Actuating Device Operational Test (TADOT) to be performed once per 18 months. The ISTS surveillance is modified by a note that specifies "verification of setpoint is not required." The CTS surveillance is revised to conform to the ISTS surveillance. This changes the CTS by explicitly stating that setpoint verification is not required for these two RTS Functions. The change from the CTS CFT defined term to the ISTS TADOT defined term is addressed in the DOCs associated with TS Section 1.0, Definitions. This DOC is only intended to address the addition of the ISTS note that excepts the verification of setpoints.

The proposed change is acceptable because the affected RTS Functions do not have a setpoint to verify. The Safety Injection Input Function simply initiates a reactor trip whenever a Safety Injection is initiated. The RCP Breaker Position Function initiates a reactor trip based on RCP breaker position (two-out-of-three RCP breakers open initiate a reactor trip). In addition, the proposed change is acceptable because it is consistent with the CTS CFT definition which does not require setpoints to be verified. Since the affected Functions do not have setpoints to verify, the proposed change does not introduce a technical change to the CTS requirements. As such, the proposed change is designated administrative.

A.32 CTS Table 4.3-1 contains a line item for the RTB Bypass Breakers. The CTS Table specifies two CFT surveillances for the RTB Bypass Breakers a monthly CFT and a refueling interval CFT. The corresponding ISTS Table 3.3.1-1 does not contain a specific line item for the RTB Bypass Breakers. The ISTS combines the surveillance requirements for the Bypass Breakers with the RTBs and the manual reactor trip function. The ISTS specifies one monthly (on a staggered test basis) TADOT for the RTBs and one 18 month TADOT for the manual reactor trip function. The CTS is revised to conform to the ISTS. This changes the CTS by eliminating a specific line item for the RTB Bypass Breakers and combining the CTS surveillances for the RTB Bypass Breakers with the RTB and manual reactor trip function surveillances. The differences between the CTS CFT defined term and the ISTS TADOT defined term are addressed in the DOCs associated with TS Section 1.0, Definitions. This DOC is intended to address the changes to the CTS Table 4.3-1 line item for the RTB Bypass Breakers.

The purpose of the CTS monthly CFT specified in Table 4.3-1 for the Bypass Breakers is stated in the associated Note # 12. CTS Note 12 requires a local manual shunt trip prior to placing the Bypass Breakers in service. The intent of the CTS requirement is to test the Bypass Breakers (locally) each time they are placed in service to allow testing of the RTBs. The testing of the Bypass Beakers and RTBs are linked by the fact the Bypass Breaker must be placed in service before the RTB can be tested. The ISTS addresses this by footnote (g) applicable to the RTB line item on ISTS Table 3.3.1-1. Footnote (g) specifies that the RTB requirements in Table 3.3.1-1 (including the surveillance requirement) are applicable to the bypass breakers when they are racked in and closed for bypassing an RTB. The proposed change to this surveillance (combining with the RTB surveillance) is acceptable because the ISTS RTB surveillance retains the requirement to perform the surveillance on the Bypass Breakers prior to placing them in service and normally the Bypass Breaker is placed in service prior to testing the associated RTB. Thus, the Bypass Breakers continue to be tested in the same manner as before. The proposed change re-organizes the CTS to conform more closely to the relationship between the RTBs and the Bypass Beakers and the actual frequency of testing.

The purpose of the refueling interval CFT specified on CTS Table 4.3-1 for the RTB Bypass Breakers is stated in the associated Note 13. CTS Note 13 states "automatic undervoltage trip." The intent of this surveillance is to allow the automatic undervoltage trip function on the Bypass Breakers to be tested during shutdown conditions when this trip Function can be actuated by the manual reactor trip switch. The undervoltage trip function can not be tested on line and is normally tested by actuating the manual reactor trip switch. The proposed change to this CTS surveillance (combining with the manual reactor trip Function) is acceptable because the Bypass Breaker undervoltage trip function continues to be tested in the same manner as before. The proposed change only re-organizes the surveillance requirements to more closely correspond to the actual testing performed using the manual reactor trip switch.

The proposed changes are designated administrative because the affected Functions continue to be tested in the same manner as before.

A.33 Unit 1 only. CTS Table 4.3-1 Note 5 states "each train tested every other month." The CTS Note is applicable to the surveillance requirements for the RTB and Automatic Trip Logic RTS Functions. The corresponding ISTS surveillance requirements for these RTS Functions specify that the surveillance is performed monthly on a STAGGERED TEST BASIS. The CTS is revised to conform to the ISTS. This changes the CTS by revising Note 5 from requiring that each train be tested every other month to the Function being tested monthly on a staggered test basis.

The proposed change is acceptable because it does not introduce a technical change to the CTS surveillance requirements. The ISTS utilizes the defined term "Staggered Test Basis". The use of this term in a monthly surveillance results in each train of the affected RTS Functions being tested every other month. Thus, the proposed change results in the same surveillance frequency as the CTS. The proposed change simply adopts the ISTS terminology for this type of surveillance frequency. As the proposed change does not result in a technical change to the CTS requirements it is designated administrative.

A.34 The CTS surveillance requirements specified on Table 4.3-1 for the Overtemperature ΔT RTS Function include a channel check, channel functional test, and channel calibration. The corresponding requirements in the ISTS include two additional surveillances. The ISTS includes the surveillances that require that the excore nuclear instrumentation be adjusted and calibrated to agree with the incore instrumentation. The incore/excore calibration requirements (SR 3.3.1.3 and SR 3.3.1.9) are also specified for the power range neutron flux high setpoint RTS Function. The CTS is revised to conform to the ISTS. This changes the CTS by assigning two additional surveillances to the Overtemperature ΔT RTS Function.

The incore/excore calibration requirements are necessary to assure the f(ΔI) input to the Overtemperature ΔT RTS Function is accurate. As these surveillance requirements support the operability of the Overtemperature ΔT RTS Function they should be associated with that Function. The proposed change is acceptable because it clarifies the association of these surveillance requirements with the Overtemperature ΔT RTS Function. The proposed change does not result in a technical change to the CTS. The surveillances continue to be performed in a similar manner as before and only the presentation of this information in the TS is affected. As such, the proposed change provides a clarification regarding the purpose of the affected surveillances without impacting the performance requirements. The proposed change is designated administrative as it does not introduce a technical change to the CTS.

A.35 CTS Note 3 in Table 4.3-1 states "At least once every 31 Effective Full Power Days (EFPD) compare incore to excore axial imbalance above 15 percent of RATED THERMAL POWER. Recalibrate if absolute difference greater than or equal to 3 percent." The corresponding ISTS surveillance SR 3.3.1.3 is similar except that it states " Adjust NIS channel if absolute difference is ≥ 3%." The CTS is revised to conform to the ISTS. This changes the CTS by rewording the Note modifying the monthly comparison of the incore and excore detectors.

The proposed change involves the specific surveillance instructions for equalizing the excore detector ΔI indications to the incore readings if the difference exceeds the limit. In actual practice the resetting (or adjustment) of the power range channel ΔI indications involves recalibration of the nuclear instrumentation system (NIS) to incorporate the new settings. The proposed change is acceptable because it does not substantially effect the necessary actions to incorporate any adjustments into the NIS. As such, the affected surveillance will continue to be performed in the same manner as before. The proposed change does not result in any reduction in the required surveillance testing of the NIS. The proposed change continues to provide adequate assurance that the NIS is maintained operable and performing within a known tolerance. As the proposed change does not result in a technical change to the method for performing the surveillance or the surveillance acceptance criteria, it is designated administrative.

ENCLOSURE 4

DETERMINATIONS OF
***NO SIGNIFICANT HAZARDS CONSIDERATION (NSHC)***
FOR
CHANGES MADE TO THE BVPS
CURRENT TECHNICAL SPECIFICATIONS (CTS)

Introduction

The determinations of NSHC contained within this Enclosure consist of two general types. This enclosure contains "Generic" NSHC developed for the categories of change identified in Enclosure 3 (Changes to the CTS) and "Specific" NSHC for those "Less Restrictive" changes that do not fit within one of the generic determinations of NSHC listed below. Each specific NSHC is identified by the associated Technical Specification and discussion of change (DOC) number from Enclosure 3.

Enclosure Contents

NO SIGNIFICANT HAZARDS DETERMINATION
FOR

***ADMINISTRATIVE CHANGES***

The Beaver Valley Power Station (BVPS) is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve reformatting, renumbering, and rewording of Technical Specifications with no change in intent. These changes, since they do not involve technical changes to the Technical Specifications, are administrative.

This type of change is associated with the movement of requirements within the Technical Specifications, or with the modification of wording or format that does not affect the technical content of the current Technical Specifications. In addition, these changes include all non-technical modifications of requirements to provide consistency with the ISTS in NUREG-1431. Administrative changes do not add, delete, or relocate any technical requirements of the current Technical Specifications.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change involves reformatting, renumbering, and rewording the existing Technical Specifications. The reformatting, renumbering, and rewording process involves no technical changes to the existing Technical Specifications. As such, this change is administrative in nature and does not affect initiators of analyzed events or assumed mitigation of accident or transient events. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or changes in methods governing normal plant operation. The proposed change will not impose any new or eliminate any old requirements. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **Does this change involve a significant reduction in a margin of safety?**

   The proposed change will not reduce a margin of safety because it has no effect on any safety analyses assumptions. This change is administrative in nature. Therefore, the change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR

***MORE RESTRICTIVE CHANGES***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve adding more restrictive requirements to the existing Technical Specifications by either making current requirements more stringent or by adding new requirements that currently do not exist.

These changes include such things as additional commitments that decrease allowed outage times, increase the frequency of surveillances, impose additional surveillances, increase the scope of specifications to include additional plant equipment, increase the applicability of specifications, or provide additional actions. These changes are generally made to conform to the ISTS in NUREG-1431 and are only included in the Technical Specifications when they serve to enhance the safe operation of the plant and are consistent with the applicable plant specific design basis and safety analysis assumptions.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change provides more stringent requirements for operation of the facility. These more stringent requirements do not result in operation that will increase the probability of initiating an analyzed event and do not alter assumptions relative to mitigation of an accident or transient event. The more restrictive requirements continue to ensure process variables, structures, systems, and components are maintained consistent with the safety analyses and licensing basis. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or changes in methods governing normal plant operation. The proposed change does revise Technical Specification requirements. However, these changes are consistent with the assumptions in the safety analyses and licensing basis. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
**MORE RESTRICTIVE CHANGES**
(continued)

3. **Does this change involve a significant reduction in a margin of safety?**

The imposition of more restrictive requirements either has no effect on or increases the margin of plant safety. Each change in this category is, by definition, providing additional restrictions to enhance plant safety. The change maintains requirements within the safety analyses and licensing basis. Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
***LESS RESTRICTIVE CHANGES -***

***REMOVED DETAIL***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve moving details out of the Technical Specifications and into the Technical Specifications Bases, the Updated Final Safety Analyses Report (UFSAR), the Licensing Requirements manual (LRM) or other documents under regulatory control such as the Quality Assurance Program. The removal of this information is considered to be less restrictive because the Technical Specification change process no longer controls the information. Typically, the affected information is descriptive detail and the removal of this information conforms to the NRC approved content and format of the ISTS in NUREG-1431.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change relocates certain details from the Technical Specifications to other documents under regulatory control. The Technical Specification Bases, UFSAR, and Licensing Requirement Manual will be maintained in accordance with 10 CFR 50.59. In addition to 10 CFR 50.59 provisions, the Technical Specification Bases are subject to the change control provisions in the Administrative Controls Chapter of the Technical Specifications. The UFSAR is subject to the change control provisions of 10 CFR 50.71(e). Other documents used to contain the removed information are subject to controls imposed by Technical Specifications or regulations. As such, the relocation of descriptive details will only affect the level of regulatory control applicable to changes to the information moved. Changes to the affected information will continue to be evaluated in accordance with 10 CFR 50.59. As such, no significant increase in the probability or consequences of an accident previously evaluated will result. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operations. The proposed change will not impose or eliminate any requirements, and adequate control of the information will be maintained. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
**LESS RESTRICTIVE CHANGES - REMOVED DETAIL**
*(continued)*

3. **Does this change involve a significant reduction in a margin of safety?**

   The proposed change will not reduce a margin of safety because it has no effect on any safety analysis assumptions. In addition, the descriptive details to be moved from the Technical Specifications to other documents are not being changed. Since any future changes to these details will be evaluated under the applicable regulatory change control mechanism, no significant reduction in a margin of safety will be allowed. A significant reduction in the margin of safety is not associated with the elimination of the 10 CFR 50.92 requirement for NRC review and approval of future changes to the relocated details. The proposed change provides consistency with the level of detail in the Westinghouse Standard Technical Specifications, NUREG-1431, issued and approved by the NRC Staff, which provides additional assurance that the proposed change has been evaluated and determined not to introduce a significant reduction in the margin of safety. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 2

***RELAXATION OF APPLICABILITY***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve relaxation of the applicability of current Technical Specification (CTS) Limiting Conditions for Operation (LCOs) by reducing the conditions under which the LCO requirements must be met.

Technical Specification Applicability can be specific defined terms of reactor conditions or more general (e.g., all MODES or any operating MODE). Such generalized applicability conditions are not contained in ISTS, therefore the ISTS eliminates such Applicability requirements replacing them with ISTS defined MODES or specific reactor or plant conditions that are consistent with the safety analysis assumptions for operability of the required features.

Applicability requirements may also be eliminated during conditions for which the safety function of the specified safety system is met because the feature is performing its intended safety function (e.g. actuation instrumentation may no longer be required for an isolation valve already in its required safety position). Deleting applicability requirements that are indeterminate or that are inconsistent with the application of accident analyses assumptions is acceptable because when LCOs cannot be met, the Technical Specifications may be satisfied by exiting the applicability which takes the plant out of the conditions that require the safety system to be OPERABLE.

These changes provide the protection required by the safety analysis and provide flexibility for meeting limits by restricting the application of the limits to the conditions assumed in the safety analyses. The proposed changes may also be consistent with the current licensing basis, as identified in the discussion of individual changes. These changes are generally made to conform to NUREG-1431 or more accurately reflect the current licensing basis and have been evaluated to not be detrimental to plant safety.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 2
**RELAXATION OF APPLICABILITY**
(continued)

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change relaxes the conditions under which the LCO requirements for operation of the facility must be met. These less restrictive applicability requirements for the LCOs do not result in operation that will increase the probability of initiating an analyzed event and do not alter assumptions relative to mitigation of an accident or transient event in that the requirements continue to ensure that process variables, structures, systems, and components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. The proposed change does impose different requirements. However, the requirements are consistent with the assumptions in the safety analyses and licensing basis. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **Does this change involve a significant reduction in a margin of safety?**

   The relaxed applicability of LCO requirements does not involve a significant reduction in the margin of safety. This change has been evaluated to ensure that the LCO requirements are applied in the MODES and specified conditions assumed in the safety analyses and licensing basis. Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 3

***RELAXATION OF COMPLETION TIME***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve relaxation of the Completion Times for Required Actions in the current Technical Specifications (CTS).

Upon discovery of a failure to meet a Limiting Condition for Operation (LCO), the ISTS specifies times for completing Required Actions of the associated Technical Specification Conditions. Required Actions of the associated Conditions are used to establish remedial measures that must be taken within specified Completion Times (referred to as Allowed Outage Times (AOTs) in the CTS). These times define limits during which operation in a degraded condition is permitted. Adopting Completion Times from the ISTS is acceptable because the Completion Times take into account the operability status of the redundant systems of required features, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a design basis accident occurring during the repair period. In addition, the ISTS provides consistent Completion Times for similar conditions. These changes are generally made to conform to NUREG-1431 and have been evaluated to not be detrimental to plant safety.

The effect of each change relative to the safe operation of the plant was evaluated in the discussion associated with the change. In addition, the proposed changes that are consistent with the ISTS have been previously evaluated by Westinghouse Electric Corp., the Westinghouse Owners Group, NEI, and the NRC in developing the ISTS and found not to adversely affect the safe operation of Westinghouse plants. In the Final Policy Statement on Technical Specification Improvements for Nuclear Power Reactors (58 FR 39132, 7/22/93), the NRC encourages licensees to update their Technical Specifications consistent with their vendor-specific ISTS and endorses the implementation of these new Technical Specifications by stating that implementation of the ISTS is expected to produce an improvement in the safety of nuclear power plants. Furthermore, the provisions of the ISTS have been adopted by many Westinghouse plants over the last 10 years. The combined operating experience of the plants that have implemented the ISTS also serves to demonstrate that the provisions of the ISTS do not adversely affect the safe operation of Westinghouse plants.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 3
**RELAXATION OF COMPLETION TIME**
(continued)

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change provides a less restrictive Completion Time for a Required Action. The effect of the change relative to the safe operation of the plant was evaluated in the discussion associated with the change. The change has been determined not to adversely affect the safe operation of the plant. Required Actions and their associated Completion Times are not initiating conditions for any accident previously evaluated. In addition, changes that are consistent with the ISTS have been previously evaluated and found not to adversely affect the safe operation of Westinghouse plants or the initiation of any accident previously evaluated. Based on the conclusions of the plant specific evaluation associated with the change and the evaluation performed in developing the ISTS, the proposed change does not result in operating conditions that will significantly increase the probability of initiating an analyzed event. In addition, the proposed change was evaluated to assure that it does not alter the safety analysis assumptions relative to mitigation of an accident or transient event and that the resulting requirements continue to ensure the necessary process variables, structures, systems, and components are maintained operable consistent with the safety analyses or that the plant is placed in an operating Mode where the process variable, structure, system, or component is no longer required operable. The consequences of an analyzed accident during the relaxed Completion Time are the same as the consequences during the existing Completion Time (i.e., initial plant conditions are the same). As a result, the consequences of any accident previously evaluated are not significantly increased. As such, the proposed change also does not result in operating conditions that will significantly increase the consequences of an analyzed event. Therefore, the change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the method governing normal plant operation. The Required Actions and associated Completion Times in the ISTS have been evaluated to ensure that no new accident initiators are introduced. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 3
**RELAXATION OF COMPLETION TIME**
(continued)

3. **Does this change involve a significant reduction in a margin of safety?**

The effect of the change relative to the safe operation of the plant was evaluated in the discussion associated with the change. The change has been determined not to adversely affect the safe operation of the plant. In addition, changes that are consistent with the ISTS have been previously evaluated and found not to adversely affect the safe operation of Westinghouse plants. Based on the conclusions of the plant specific evaluation associated with each change and the evaluation performed in developing the ISTS, the change has been determined to maintain plant operation within the assumptions of the applicable safety analyses. As such, the change does not result in operating conditions that significantly reduce any margin of safety. Therefore, the change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 4

***RELAXATION OF REQUIRED ACTION***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve relaxation of the Required Actions in the current Technical Specifications (CTS).

Upon discovery of a failure to meet a Limiting Condition for Operation (LCO), the ISTS specifies Required Actions to complete for the associated Conditions. Required Actions of the associated Conditions are used to establish remedial measures that must be taken in response to the degraded conditions. These actions minimize the risk associated with continued operation while providing time to repair inoperable features. Some of the Required Actions are modified to place the plant in a MODE in which the LCO does not apply. Adopting Required Actions from the ISTS is acceptable because the Required Actions take into account the operability status of redundant systems of required features, the capacity and capability of the remaining features, and the compensatory attributes of the Required Actions as compared to the LCO requirements. These changes are generally made to conform to NUREG-1431 and have been evaluated to not be detrimental to plant safety.

The effect of each change relative to the safe operation of the plant was evaluated in the discussion associated with the change. In addition, the proposed changes that are consistent with the ISTS have been previously evaluated by Westinghouse Electric Corp., the Westinghouse Owners Group, NEI, and the NRC in developing the ISTS and found not to adversely affect the safe operation of Westinghouse plants. In the Final Policy Statement on Technical Specification Improvements for Nuclear Power Reactors (58 FR 39132, 7/22/93), the NRC encourages licensees to update their Technical Specifications consistent with their vendor-specific ISTS and endorses the implementation of these new Technical Specifications by stating that implementation of the ISTS is expected to produce an improvement in the safety of nuclear power plants. Furthermore, the provisions of the ISTS have been adopted by many Westinghouse plants over the last 10 years. The combined operating experience of the plants that have implemented the ISTS also serves to demonstrate that the provisions of the ISTS do not adversely affect the safe operation of Westinghouse plants.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 4
**RELAXATION OF REQUIRED ACTION**
(continued)

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change provides less restrictive Required Actions for operation of the facility. The effect of the change relative to the safe operation of the plant was evaluated in the discussion associated with the change. The change has been determined not to adversely affect the safe operation of the plant. Required Actions are not initiating conditions for any accident previously evaluated. In addition, changes that are consistent with the ISTS have been previously evaluated and found not to adversely affect the safe operation of Westinghouse plants. Based on the conclusions of the plant specific evaluation associated with the change and the evaluation performed in developing the ISTS, the proposed change does not result in operating conditions that will significantly increase the probability of initiating an analyzed event. The proposed change was also evaluated to assure that it does not alter the safety analysis assumptions relative to mitigation of an accident or transient event and that the resulting requirements continue to ensure the necessary process variables, structures, systems, and components are maintained operable consistent with the safety analyses or that the plant is placed in an operating Mode where the process variable, structure, system, or component is no longer required operable. In addition, the proposed change provides the appropriate remedial actions to be taken in response to the degraded condition considering the operability status of the redundant systems of required features, and the capacity and capability of remaining features while minimizing the risk associated with continued operation. As such the proposed change also does not result in operating conditions that will significantly increase the consequences of an analyzed event. Therefore, the change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. The Required Actions in the ISTS have been evaluated to ensure that no new accident initiators are introduced. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 4
**RELAXATION OF REQUIRED ACTION**
(continued)

3. **Does this change involve a significant reduction in a margin of safety?**

The effect of the change relative to the safe operation of the plant was evaluated in the discussion associated with the change. The change has been determined not to adversely affect the safe operation of the plant. In addition, changes that are consistent with the ISTS have been previously evaluated and found not to adversely affect the safe operation of Westinghouse plants. Based on the conclusions of the plant specific evaluation associated with each change and the evaluation performed in developing the ISTS, the change has been determined to maintain plant operation within the assumptions of the applicable safety analyses. As such, the change does not result in operating conditions that significantly reduce any margin of safety. Therefore, the change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 6

***RELAXATION OF SURVEILLANCE REQUIREMENT ACCEPTANCE CRITERIA***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve the relaxation of Surveillance Requirements acceptance criteria in the current Technical Specifications (CTS).

The CTS require safety systems to be tested and verified Operable prior to entering applicable operating conditions. The ISTS eliminates or relaxes the Surveillance Requirement acceptance criteria that do not contribute to verification that the equipment used to meet the Limiting Condition for Operation (LCO) can perform its required functions. For example, the ISTS allows some Surveillance Requirements to verify Operability under actual or test conditions. Adopting the ISTS allowance for "actual" conditions is acceptable because required features cannot distinguish between an "actual" signal and a "test" signal. Also included are changes to CTS requirements that are replaced in the ITS with separate and distinct testing requirements which, when combined, include Operability verification of all Technical Specification required components for the features specified in the CTS. Adopting this format preference in the ISTS is acceptable because Surveillance Requirements that remain include testing of all previous features required to be verified OPERABLE. Changes that provide exceptions to Surveillance Requirements to provide for variations that do not affect the results of the test are also included in this category. These changes are generally made to conform to NUREG-1431 and have been evaluated to not be detrimental to plant safety.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change relaxes the acceptance criteria of Surveillance Requirements. Surveillances are not initiators to any accident previously evaluated. Consequently, the probability of an accident previously evaluated is not significantly increased. The equipment being tested is still required to be OPERABLE and capable of performing the accident mitigation functions assumed in the accident analysis. As a result, the consequences of any accident previously evaluated are not significantly affected. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 6
**RELAXATION OF SURVEILLANCE REQUIREMENT ACCEPTANCE CRITERIA**
(continued)

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **Does this change involve a significant reduction in a margin of safety?**

   The relaxed acceptance criteria for Surveillance Requirements do not result in a significant reduction in the margin of safety. The relaxed Surveillance Requirement acceptance criteria have been evaluated to ensure that they are sufficient to verify that the equipment used to meet the LCO can perform its required functions. Therefore, appropriate equipment continues to be tested in a manner that gives confidence that the equipment can perform its assumed safety function. Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 7

***RELAXATION OF SURVEILLANCE FREQUENCY***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve the relaxation of Surveillance Frequencies in the current Technical Specifications (CTS).

CTS and ISTS Surveillance Frequencies specify time interval requirements for performing surveillance testing. Increasing the time interval between Surveillance tests in the ISTS results in decreased equipment unavailability due to testing which also increases equipment availability. In general, the ISTS contain test frequencies that are consistent with industry practice or industry standards for achieving acceptable levels of equipment reliability. Adopting testing practices specified in the ISTS is acceptable based on similar design, like-component testing for the system application and the availability of other Technical Specification requirements which provide regular checks to ensure limits are met. Relaxation of Surveillance Frequency may also include changes such as the addition of Surveillance Notes which allow testing to be delayed until appropriate unit conditions for the test are established, or exempt testing in certain MODES or specified conditions in which the testing can not be performed.

Reduced testing can result in a safety enhancement because the unavailability due to testing is reduced and; in turn, reliability of the affected structure, system or component should remain constant or increase. Reduced testing is acceptable where operating experience, industry practice or the industry standards such as manufacturers' recommendations have shown that these components usually pass the Surveillance when performed at the specified interval, therefore the frequency is acceptable from a reliability standpoint. Surveillance Frequency changes to incorporate alternate train testing have been shown to be acceptable where other qualitative or quantitative test requirements are required which are established predictors of system performance. Surveillance Frequency extensions can be based on NRC-approved topical reports. The NRC staff has accepted topical report analyses that bound the plant-specific design and component reliability assumptions. These changes are generally made to conform to NUREG-1431 and have been evaluated to not be detrimental to plant safety.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change relaxes Surveillance Frequencies. The relaxed Surveillance Frequencies have been established based on achieving acceptable levels of equipment reliability.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 7
**RELAXATION OF SURVEILLANCE FREQUENCY**
(continued)

Consequently, equipment which could initiate an accident previously evaluated will continue to operate as expected and the probability of the initiation of any accident previously evaluated will not be significantly increased. The equipment being tested is still required to be OPERABLE and capable of performing any accident mitigation functions assumed in the accident analysis. As a result, the consequences of any accident previously evaluated are not significantly affected. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **Does this change involve a significant reduction in a margin of safety?**

   The relaxed Surveillance Frequencies do not result in a significant reduction in the margin of safety. The relaxation in the Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. Thus, appropriate equipment continues to be tested at a Frequency that gives confidence that the equipment can perform its assumed safety function when required. Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR

***SPECIFIC LESS RESTRICTIVE CHANGES***

NONE

# BVPS CONVERSION TO IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS)

## *SECTION 3.3C ESFAS*

ENCLOSURES

1. MARKUP OF THE ISTS TO SHOW THE BVPS DIFFERENCE AND JUSTIFICATION FOR THE DEVIATION (JFD) FROM THE STANDARD
2. MARKUP OF THE ISTS BASES TO SHOW THE BVPS DIFFERENCE AND JFD FROM THE STANDARD
3. MARKUP OF THE CURRENT BVPS TECHNICAL SPECIFICATIONS (CTS) TO SHOW CHANGES AND DISCUSSION OF CHANGES (DOCs)
4. NO SIGNIFICANT HAZARDS CONSIDERATION (NSHC) FOR CHANGES MADE TO THE CTS

ENCLOSURE 1

***CHANGES TO THE ISTS***

MARKUPS TO SHOW BVPS PLANT SPECIFIC DIFFERENCES
&
JUSTIFICATION FOR DEVIATION (JFD)
FROM THE STANDARD TS

Introduction

This enclosure contains the markup of the Improved Standard Technical Specifications (ISTS) to show the changes necessary to make the ISTS document specific to BVPS Units 1 and 2. Changes to the ISTS are identified with a number. The number is associated with a JFD that describes the reason for the change. The markup of the ISTS is followed by a document containing the numbered JFDs for the changes made to each of the ISTS. Not every change to the ISTS is identified and explained by a JFD. Changes that simply insert current Technical Specification (CTS) information into bracketed (optional) ISTS text are not identified with a separate JFD. Bracketed ISTS text identifies specific text that is to be replaced with the corresponding CTS information. Therefore, such changes to the ISTS are self-explanatory and represent the simple transference of CTS requirements to the ISTS. Other changes to the ISTS (i.e., less obvious changes) are described by a JFD.

As the BVPS Unit 1 & 2 Technical Specifications (TS) are being combined into a single set of TS, one markup of each ISTS is usually provided for both Units 1 and 2. In cases where significant Unit differences make separate Unit 1 and 2 TS desirable to preserve the presentation and clarity of the TS requirements, separate Unit specific TS are included. Unit differences are identified in each ISTS.

In addition, the ISTS in this enclosure are marked (where applicable) to show the changes to the standard text resulting from the Industry/NRC TS Task Force (TSTF) process. The TSTF revisions to the standard are marked-up and identified with the applicable TSTF number (i.e., TSTF-03, TSTF-19, etc.). Each TSTF change has its own justification associated with it as part of the Industry/NRC process. The TSTF justifications are not repeated in the BVPS ISTS conversion documentation.

The following Table contains the list of the ISTS and the corresponding BVPS CTS for this section along with the resulting BVPS specific ITS for the section. The Table provides a summary disposition of the ISTS and the CTS for this Section.

SECTION 3.3A2 ESFAS INSTRUMENTATION

| ISTS | BVPS ITS | CTS |
|---|---|---|
| 3.3.2 ESFAS Instrumentation | 3.3.2 ESFAS Instrumentation | 3.3.2.1 ESFAS Instrumentation |

## 3.3 INSTRUMENTATION

### 3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation

LCO 3.3.2 The ESFAS instrumentation for each Function in Table 3.3.2-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.2-1.

ACTIONS

**- NOTE -**
Separate Condition entry is allowed for each Function.

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more Functions with one or more required channels or trains inoperable. | A.1 Enter the Condition referenced in Table 3.3.2-1 for the channel(s) or train(s). | Immediately |
| B. One channel or train inoperable. | B.1 Restore channel or train to OPERABLE status. | 48 hours |
| | <u>OR</u> | |
| | B.2.1 Be in MODE 3. | 54 hours |
| | <u>AND</u> | |
| | B.2.2 Be in MODE 5. | 84 hours |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| C. One train inoperable. | - NOTE -<br>One train may be bypassed for up to [ 4 ] hours for surveillance testing provided the other train is OPERABLE. | | NUREG-1431, Rev. 3 |
| | C.1 | Restore train to OPERABLE status. | 6 hours |
| | OR | | |
| | C.2.1 | Be in MODE 3. | 12 hours |
| | AND | | |
| | C.2.2 | Be in MODE 5. | 42 hours |
| D. One channel inoperable. | - NOTE -<br>The inoperable channel may be bypassed for up to [ 4 ] hours for surveillance testing of other channels. | | NUREG-1431, Rev. 3 |
| | D.1 | Place channel in trip. | 6 hours |
| | OR | | |
| | D.2.1 | Be in MODE 3. | 12 hours |
| | AND | | |
| | D.2.2 | Be in MODE 4. | 18 hours |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| E. One Containment Pressure channel inoperable. | - NOTE - One additional channel may be bypassed for up to [ 4 ] hours for surveillance testing. | NUREG-1431, Rev. 3 |
| | E.1 Place channel in bypass. | 6 hours |
| | <u>OR</u> | |
| | E.2.1 Be in MODE 3. | 12 hours |
| | <u>AND</u> | |
| | E.2.2 Be in MODE 4. | 18 hours |
| F. One channel or train inoperable. | F.1 Restore channel or train to OPERABLE status. | 48 hours |
| | <u>OR</u> | |
| | F.2.1 Be in MODE 3. | 54 hours |
| | <u>AND</u> | |
| | F.2.2 Be in MODE 4. | 60 hours |
| G. One train inoperable. | - NOTE - One train may be bypassed for up to [ 4 ] hours for surveillance testing provided the other train is OPERABLE. | NUREG-1431, Rev. 3 |
| | G.1 Restore train to OPERABLE status. | 6 hours |
| | <u>OR</u> | |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| | G.2.1 | Be in MODE 3. | 12 hours |
| | AND | | |
| | G.2.2 | Be in MODE 4. | 18 hours |
| ~~H. One train inoperable.~~ | | ~~- NOTE - One train may be bypassed for up to [4] hours for surveillance testing provided the other train is OPERABLE.~~ | NUREG-1431, Rev. 3 |
| 1 | ~~H.1~~ | ~~Restore train to OPERABLE status.~~ | ~~6 hours~~ |
| | ~~OR~~ | | |
| | ~~H.2~~ | ~~Be in MODE 3.~~ | ~~12 hours~~ |
| ~~I.~~ H. One channel inoperable. | | - NOTE - The inoperable channel may be bypassed for up to [ 4 ] hours for surveillance testing of other channels. | NUREG-1431, Rev. 3 |
| | ~~I.1~~ H.1 | Place channel in trip. | 6 hours |
| | OR | | |
| | ~~I.2~~ H.2 | Be in MODE 3. | 12 hours |
| ~~J.~~ I. One Main Feedwater Pumps trip channel inoperable. | ~~J.1~~ I.1 | Restore channel to OPERABLE status. | 48 hours |
| | OR | | |
| | ~~J.2~~ I.2 | Be in MODE 3. | 54 hours |



6

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| ~~K~~. One channel inoperable.<br><br>J | - NOTE -<br>One additional channel may be bypassed for up to [ 4 ] hours for surveillance testing. | | NUREG-1431, Rev. 3 |
| | ~~K~~.1 | Place channel in bypass. | 6 hours |
| | <u>OR</u> | | |
| | ~~K~~.2.1 | Be in MODE 3. | 12 hours |
| | <u>AND</u> | | |
| | ~~K~~.2.2 | Be in MODE 5. | 42 hours |
| ~~L~~. One or more channels inoperable.<br><br>K | ~~L~~.1 | Verify interlock is in required state for existing unit condition. | 1 hour |
| | <u>OR</u> | | |
| | ~~L~~.2.1 | Be in MODE 3. | 7 hours |
| | <u>AND</u> | | |
| | ~~L~~.2.2 | Be in MODE 4. | 13 hours |

SURVEILLANCE REQUIREMENTS

- NOTE -
Refer to Table 3.3.2-1 to determine which SRs apply for each ESFAS Function.

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.2.1 | Perform CHANNEL CHECK. | 12 hours |



7

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.2.2 | Perform ACTUATION LOGIC TEST. | 31 days on a STAGGERED TEST BASIS |
| ~~SR 3.3.2.3~~ 2 | ~~- NOTE - The continuity check may be excluded.~~ ~~Perform ACTUATION LOGIC TEST.~~ | ~~31 days on a STAGGERED TEST BASIS~~ |
| SR 3.3.2.~~4~~ $\boxed{3}$ | Perform MASTER RELAY TEST. | 31 days on a STAGGERED TEST BASIS |
| SR 3.3.2.~~5~~ $\boxed{4}$ | Perform COT. | 92 days |
| SR 3.3.2.6 | Perform SLAVE RELAY TEST. | ~~[92]~~ days INSERT 1 3 |
| SR 3.3.2.~~7~~ $\boxed{5}$ | - NOTE - Verification of relay setpoints not required. Perform TADOT. | [92] days |
| SR 3.3.2.~~8~~ $\boxed{7}$ | - NOTE - Verification of setpoint not required ~~for manual initiation functions~~. 20 Perform TADOT. | [18] months |
| SR 3.3.2.~~9~~ $\boxed{8}$ | - NOTE - This Surveillance shall include verification that the time constants are adjusted to the prescribed values. Perform CHANNEL CALIBRATION. | [18] months |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.2.~~10~~ 9 | - NOTE -<br>Not required to be performed for the turbine driven AFW pump until [24] hours after SG pressure is ≥ ~~[1000]~~ 600 psig.<br><br>Verify ESFAS RESPONSE TIMES are within limit. | [18] months on a STAGGERED TEST BASIS |
| 21<br>SR 3.3.2.~~11~~ | - NOTE -<br>Verification of ~~setpoint~~ not required.<br><br>~~Perform~~ TADOT. | Once per reactor ~~trip breaker~~ cycle |

CTS Value

Table 3.3.2-1 (page 1 of 8)
Engineered Safety Feature Actuation System Instrumentation

| 5<br>FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | 7<br>REQUIRED CHANNELS | 4<br>CONDITIONS | SURVEILLANCE REQUIREMENTS | 6<br>UNIT 1<br>ALLOWABLE VALUE | UNIT 2 ALLOWABLE VALUE<br>~~NOMINAL TRIP SETPOINT~~ |
|---|---|---|---|---|---|---|
| 1. Safety Injection | | | | | | |
| a. Manual Initiation | 1,2,3,4 | 2 | B | SR 3.3.2.~~8~~ 7 | NA | NA |
| b. Automatic Actuation Logic and Actuation Relays | 1,2,3,4 | 2 trains | C | SR 3.3.2.~~2~~ 3<br>SR 3.3.2.4<br>SR 3.3.2.6 | NA | NA |
| c. Containment Pressure - High ~~1~~ | 1,2,3 | 3 | D | SR 3.3.2.~~1~~ 4<br>SR 3.3.2.~~5~~ 8<br>SR 3.3.2.~~9~~ 9<br>SR 3.3.2.~~10~~ | ≤ [~~3.86~~] psig<br>5.33 | [~~3.6~~] psig<br>≤ 5.3 |
| d. Pressurizer Pressure - Low | 1,2,3(a) | ~~[3]~~ | D | SR 3.3.2.~~1~~ 4<br>SR 3.3.2.~~5~~ 8<br>SR 3.3.2.~~9~~ 9<br>SR 3.3.2.~~10~~ | ≥ [~~1839~~] ~~psig~~<br>1841 | [~~1850~~] psig<br>≥ 1852 |
| e. Steam Line Pressure -<br>~~(1)~~ Low | 1,2,3[(a)] | 3 per steam line | D | SR 3.3.2.~~1~~ 4<br>SR 3.3.2.~~5~~ 8<br>SR 3.3.2.~~9~~ 9<br>SR 3.3.2.~~10~~ | ≥ [~~635~~](b) ~~psig~~<br>495.8 psig with time constant $\tau_1 \geq$ 50 secs. and $\tau_2 \leq$ 5 secs. | ~~[675](b) psig~~<br>≥ 494 psig with time constant $\tau_1 \geq$ 50 secs. and $\tau_2 \leq$ 5 secs. |
| 8 ~~(2) High Differential Pressure Between Steam Lines~~ | ~~1,2,3~~ | ~~3 per steam line~~ | ~~D~~ | ~~[SR 3.3.2.1]<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10~~ | | |

(a) Above the P-11 (Pressurizer Pressure) interlock.

~~(b) Time constants used in the lead/lag controller are $t_1 \geq$ [50] seconds and $t_2 \leq$ [5] seconds.~~

~~(c) Above the P-12 ($T_{avg}$ - Low Low) interlock.~~

~~(d) Less than or equal to a function defined as ΔP corresponding to [44]% full steam flow below [20]% load, and ΔP increasing linearly from [44]% full steam flow at [20]% load to [114]% full steam flow at [100]% load, and ΔP corresponding to [114]% full steam flow above 100% load.~~

~~(e) Less than or equal to a function defined as ΔP corresponding to [40]% full steam flow between [0]% and [20]% load and then a ΔP increasing linearly from [40]% steam flow at [20]% load to [110]% full steam flow at [100]% load.~~

6 UNIT 1 UNIT 2 ALLOWABLE VALUE

Table 3.3.2-1 (page 2 of 8)
Engineered Safety Feature Actuation System Instrumentation

5 7 4

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE | ~~NOMINAL TRIP SETPOINT~~ |
|---|---|---|---|---|---|---|
| 1. Safety Injection | | | | | | |
| f. High Steam Flow in Two Steam Lines | 1,2,3 (c) | 2 per steam line | D | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 | (d) | (e) |
| Coincident with $T_{avg}$ - Low Low | 1,2,3 (c) | 1 per loop | D | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 | ≥ [550.6]°F | [553]°F |
| g. High Steam Flow in Two Steam Lines | 1,2,3 (c) | 2 per steam line | D | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 | (d) | (e) |
| Coincident with Steam Line Pressure - Low | 1,2,3 (c) | 1 per steam line | D | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 | ≥ [635] (b) psig | [675] psig |
| 2. Containment Spray | | | | | | |
| a. Manual Initiation | 1,2,3,4 | 2 per train, 2 trains | B | SR 3.3.2.8 (7) | NA | NA |
| b. Automatic Actuation Logic and Actuation Relays | 1,2,3,4 | 2 trains | C | SR 3.3.2.2 (3)<br>SR 3.3.2.4<br>SR 3.3.2.6 | NA | NA |
| c. Containment Pressure High - ~~3~~ (High ~~High~~) | 1,2,3 | 4 | E | SR 3.3.2.1 (4)<br>SR 3.3.2.5 (8)<br>SR 3.3.2.9<br>SR 3.3.2.~~10~~ (9) | ~~≤ [12.31]~~ psig ≤ 11.43 | ~~[12.05]~~ psig ≤ 11.4 |

8

(b) Time constants used in the lead/lag controller are $t_1 \geq [50]$ seconds and $t_2 \leq [5]$ seconds.

(c) Above the P-12 ($T_{avg}$ - Low Low) interlock.

(d) Less than or equal to a function defined as ΔP corresponding to [44]% full steam flow below [20]% load, and ΔP increasing linearly from [44]% full steam flow at [20]% load to [114]% full steam flow at [100]% load, and ΔP corresponding to [114]% full steam flow above 100% load.

(e) Less than or equal to a function defined as ΔP corresponding to [40]% full steam flow between [0]% and [20]% load and then a ΔP increasing linearly from [40]% steam flow at [20]% load to [110]% full steam flow at [100]% load.



11

Table 3.3.2-1 (page 3 of 8)
Engineered Safety Feature Actuation System Instrumentation

6 UNIT 1 | UNIT 2 ALLOWABLE VALUE

| 5 FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | 7 REQUIRED CHANNELS | 4 CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE | ~~NOMINAL TRIP SETPOINT~~ |
|---|---|---|---|---|---|---|
| ~~2. Containment Spray~~ | | | | | | |
| ~~d. Containment Pressure High - 3 (Two Loop Plants)~~ | ~~1,2,3~~ | ~~[3] sets of [2]~~ 8 | | ~~SR 3.3.2.1~~<br>~~SR 3.3.2.5~~<br>~~SR 3.3.2.9~~<br>~~SR 3.3.2.10~~ | ~~≤ [12.31] psig~~ | ~~[12.05] psig~~ |
| 3. Containment Isolation | | | | | | |
| a. Phase A Isolation | | | | | | |
| (1) Manual Initiation | 1,2,3,4 | 2 | B | SR 3.3.2.8 7 | NA | NA |
| (2) Automatic Actuation Logic and Actuation Relays | 1,2,3,4 | 2 trains | C | SR 3.3.2.2<br>SR 3.3.2.4 3<br>SR 3.3.2.6 | NA | NA |
| (3) Safety Injection | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. | | | | | |
| b. Phase B Isolation | | | | | | |
| (1) Manual Initiation | 1,2,3,4 | 2 per train, 2 trains | B | SR 3.3.2.8 7 | NA | NA |
| (2) Automatic Actuation Logic and Actuation Relays | 1,2,3,4 | 2 trains | C | SR 3.3.2.2<br>SR 3.3.2.4 3<br>SR 3.3.2.6 | NA | NA |
| (3) Containment Pressure ~~High - 3~~ ~~(High-High)~~ | 1,2,3 | [4] | E | SR 3.3.2.1 4<br>SR 3.3.2.5 8<br>SR 3.3.2.9 9<br>SR 3.3.2.10 | ~~≤ [12.31]~~ psig<br>≤ 11.43 | ~~[12.05]~~ psig<br>≤ 11.4 |

6
UNIT 2 ALLOWABLE VALUE
UNIT 1

Table 3.3.2-1 (page 4 of 8)
Engineered Safety Feature Actuation System Instrumentation

5 7 4

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE | ~~NOMINAL TRIP SETPOINT~~ |
|---|---|---|---|---|---|---|
| 4. Steam Line Isolation | (Only applicable to Unit 2) | 9 per train, 2 trains | | | | |
| a. Manual Initiation | 1,2 ~~(h)~~,3 ~~(h)~~ | 2 | F | SR 3.3.2.~~8~~ 7 | NA | NA |
| b. Automatic Actuation Logic and Actuation Relays | 1,2 ~~(h)~~,3 ~~(h)~~ (b) | 2 trains | G | SR 3.3.2.2<br>SR 3.3.2.~~4~~ 3<br>SR 3.3.2.6 | NA | NA |
| c. Containment Pressure ~~High 2~~ Intermediate - High-High | 1, 2 ~~(h)~~, 3 ~~(h)~~ | ~~[4]~~ 3 CTS | D | SR 3.3.2.1 4<br>SR 3.3.2.~~5~~ 8<br>SR 3.3.2.~~9~~ 9<br>SR 3.3.2.~~10~~ | 7.33<br>≤ ~~[6.61]~~ psig | ≤ 7.3<br>~~[6.35] psig~~ |
| d. Steam Line Pressure | | | | | | |
| (1) Low | 1, 2 ~~(h)~~, 3 (a) ~~(h)~~ (b) | 3 per steam line | D | SR 3.3.2.1 4<br>SR 3.3.2.~~5~~ 8<br>SR 3.3.2.~~9~~ 9<br>SR 3.3.2.~~10~~ | ≥ ~~[635]~~ ~~(b)~~ ~~psig~~<br>495.8 psig with time constant $\tau_1 \geq$ 50 secs. and $\tau_2 \leq$ 5 secs. | ≥ 494 psig with time constant $\tau_1 \geq$ 50 secs. and $\tau_2 \leq$ 5 secs.<br>~~[675]~~ ~~(b)~~ ~~psig~~ |
| (2) Negative Rate - High | 3 ~~(f)~~ ~~(h)~~ (c) | 3 per steam line | D | SR 3.3.2.1 4<br>SR 3.3.2.~~5~~ 8<br>SR 3.3.2.~~9~~<br>SR 3.3.2.~~10~~ 9 | ~~≤ [121.6]~~ ~~(g)~~ ~~psi/sec~~<br>≤ 104.2 psi with a time constant ≥ 50 secs. | ~~[110]~~ ~~(g)~~ ~~psi/sec~~<br>≤ 103.6 psi with a time constant ≥ 50 secs. |

(a) Above the P-11 (Pressurizer Pressure) interlock.

(c) ~~(b)~~ ~~Time constants used in the lead/lag controller are $t_1 \geq$ [50] seconds and $t_2 \leq$ [5] seconds.~~

~~(f)~~ Below the P-11 (Pressurizer Pressure) interlock when SI on steam line pressure low is blocked.

(b) ~~(g)~~ ~~Time constant utilized in the rate/lag controller is ≥ [50] seconds.~~

~~(h)~~ Except when all MSIVs are closed and ~~[de-activated]~~.

11 10

Table 3.3.2-1 (page 5 of 8)
Engineered Safety Feature Actuation System Instrumentation

8

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE | NOMINAL TRIP SETPOINT |
|---|---|---|---|---|---|---|
| 4. Steam Line Isolation | | | | | | |
| e. High Steam Flow in Two Steam Lines | 1, 2 (h), 3 (h) | 2 per steam line | D | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 | (d) | (e) |
| *Coincident with* $T_{avg}$ - Low Low | 1, 2 (h), 3 (c)(h) | 1 per loop | D | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 | ≥ [550.6]°F | [553]°F |
| f. High Steam Flow in Two Steam Lines | 1, 2 (h), 3 (h) | 2 per steam line | D | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 | (d) | (e) |
| Coincident with Steam Line Pressure - Low | 1,2,(h) 3 (h) | 1 per steam line | D | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 | ≥ [635](b) psig | [675](b) psig |
| g. High Steam Flow | 1,2 (h), 3 (h) | 2 per steam line | D | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 | ≤ [25]% of full steam flow at no load steam pressure | [ ] full steam flow at no load steam pressure |
| Coincident with Safety Injection | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. | | | | | |
| and | | | | | | |
| Coincident with $T_{avg}$ - Low Low | 1,2 (h), 3 (c)(h) | [2] per loop | D | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 | ≥ [550.6]°F | [553]°F |

(b) Time constants used in the lead/lag controller are $t_1 \geq [50]$ seconds and $t_2 \leq [5]$ seconds.

(c) Above the P-12 (Tavg - Low Low) interlock.

(d) Less than or equal to a function defined as ΔP corresponding to [44]% full steam flow below [20]% load, ΔP increasing linearly from [44]% full steam flow at [20]% load to [114]% full steam flow at [100]% load, and ΔP corresponding to [114]% full steam flow above 100% load.

(e) Less than or equal to a function defined as ΔP corresponding to [40]% full steam flow between [0]% and [20]% load and then a ΔP increasing linearly from [40]% steam flow at [20]% load to [110]% full steam flow at [100]% load.

(h) Except when all MSIVs are closed and [de-activated].

8

8

Table 3.3.2-1 (page 6 of 8)
Engineered Safety Feature Actuation System Instrumentation

6 UNIT 1 | UNIT 2 ALLOWABLE VALUE

5 | 7 | 4

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE | ~~NOMINAL TRIP SETPOINT~~ |
|---|---|---|---|---|---|---|
| 4. ~~Steam Line~~ Isolation | | | | | | |
| h. High High Steam Flow | 1,2 (h),3 (h) | 2 per steam line | D | ~~SR 3.3.2.1~~ SR 3.3.2.5 SR 3.3.2.9 ~~SR 3.3.2.10~~ | ≤ [130]% of full steam flow at full load steam pressure | [ ] of full steam flow at full load steam pressure |
| Coincident with ~~Safety Injection~~ | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. | | | | | |
| 8 | | | | | | |
| 5. Turbine Trip and Feedwater Isolation | (d) | | | | | |
| a. Automatic Actuation Logic and Actuation Relays | 1, 2 (i), ~~[3]~~(i) | 2 trains | ~~H~~[G] | SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6 (3) | NA | NA |
| b. SG Water Level - High High (P-14) | 1,2 (i),[3](i) | [3] per SG | ~~I~~[D] | SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10 (4) (8) (9) | ≤ ~~[84.2]~~% 90.2 | ~~[82.4]%~~ ≤ 92.7 |
| c. Safety Injection | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. | | | | | |
| 6. Auxiliary Feedwater | | | | | | |
| a. Automatic Actuation Logic and Actuation Relays ~~(Solid State Protection System)~~ 13 | 1,2,3 | 2 trains | G | SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6 (3) | NA | NA |
| b. Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS) | 1,2,3 | 2 trains | G | SR 3.3.2.3 | NA | NA |
| 8 | | | | | | |

(d)

~~(h) Except when all MSIVs are closed and [de-activated].~~

(i) ~~Except when all MFIVs, MFRVs, [and associated bypass valves] are closed and [de-activated] [or isolated by a closed manual valve].~~

Except when all Main Feedwater Lines are isolated by either closed and deactivated MFIVs, or MFRVs and associated bypass valves, or closed manual valves. 12



15

Table 3.3.2-1 (page 7 of 8)
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | UNIT 1 ALLOWABLE VALUE | ~~NOMINAL TRIP SETPOINT~~ UNIT 2 ALLOWABLE VALUE |
|---|---|---|---|---|---|---|
| 6. Auxiliary Feedwater | | | | | | |
| ~~c.~~ b. SG Water Level - Low Low | 1,2,3 | ~~[3]~~ per SG | D | SR 3.3.2.1<br>SR 3.3.2.~~5~~<br>SR 3.3.2.9<br>SR 3.3.2.~~10~~ | ≥ ~~[30.4]%~~ 19.1 | ~~[32.2]%~~ ≥ 20 |
| ~~d.~~ c. Safety Injection | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. | | | | | |
| ~~e. Loss of Offsite Power~~ | ~~1,2,3~~ | ~~[3] per bus~~ | ~~F~~ | ~~SR 3.3.2.7~~<br>~~SR 3.3.2.9~~<br>~~SR 3.3.2.10~~ | ~~≥ [2912] V with ≤ 0.8 sec time delay~~ | ~~[2975] V with ≤ 0.8 sec time delay~~ |
| ~~f.~~ d. Undervoltage Reactor Coolant Pump | 1,2 | 1 ~~[3]~~ per bus | H ~~I~~ | SR 3.3.2.~~7~~<br>SR 3.3.2.9<br>SR 3.3.2.~~10~~ | ~~≥ [69]% bus voltage~~ ≥ 2962 V | ~~[70]% bus voltage~~ ≥ 2962 V |
| ~~g.~~ e. Trip of all Main Feedwater Pumps | 1,2 | 1 ~~[2]~~ per pump | I ~~J~~ | SR 3.3.2.8<br>~~SR 3.3.2.9~~<br>SR 3.3.2.~~10~~ | ~~≥ [ ] psig~~ NA | ~~[ ] psig~~ NA |
| ~~h. Auxiliary Feedwater Pump Suction Transfer on Suction Pressure - Low~~ | ~~1,2,3~~ | ~~[2]~~ | ~~F~~ | ~~SR 3.3.2.1~~<br>~~SR 3.3.2.7~~<br>~~SR 3.3.2.9~~ | ~~≥ [20.53] [psia]~~ | ~~[ ] [psia]~~ |
| 7. Automatic Switchover to Containment Sump | | | | | | |
| a. Automatic Actuation Logic ~~and Actuation Relays~~ | 1,2,3,4 | 2 trains | B ~~C~~ | SR 3.3.2.2<br>SR 3.3.2.4<br>~~SR 3.3.2.6~~ | NA | NA |
| b. Refueling Water Storage Tank (RWST) Level ~~- Low Low~~ Low (Unit 1) Extreme Low (Unit 2) | 1,2,3,4 | 4 | J ~~K~~ | SR 3.3.2.1<br>SR 3.3.2.~~5~~<br>SR 3.3.2.~~9~~<br>~~SR 3.3.2.10~~ | ~~≥ [15]% and ≤ [ ]%~~ ≥ 13' 9" and ≤ 14' 4" | ~~[ ]% and [ ]%~~ ≥ 31' 8" and ≤ 31' 10" |
| Coincident with Safety Injection | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. | | | | | |



16

6 UNIT 2 ALLOWABLE VALUE

Table 3.3.2-1 (page 8 of 8)
Engineered Safety Feature Actuation System Instrumentation

5 7 4 UNIT 1

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE | ~~NOMINAL TRIP SETPOINT~~ |
|---|---|---|---|---|---|---|
| 7. Automatic Switchover to Containment Sump | | | | | | |
| c. RWST Level - Low Low | 1,2,3,4 | 4 | K | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 | ≥ [15]% | [18]% |
| Coincident with Safety Injection | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. | | | | | |
| and | | | | | | |
| Coincident with Containment Sump Level - High | 1,2,3,4 | 4 | K | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 | ≥ [30] in. above el. [703] ft | [ ] in. above el. [ ]ft |
| 8. ESFAS Interlocks | | | | | | |
| a. Reactor Trip, P-4 | 1,2,3 | 1 per train, 2 trains | F | SR 3.3.2.~~11~~ 7 | NA | NA |
| b. Pressurizer Pressure, P-11 | 1,2,3 | 3 | ~~L~~ K | SR 3.3.2.1 4<br>SR 3.3.2.~~5~~ 8<br>SR 3.3.2.9 | ~~≤ [1996]~~ psig ≤ 2004 | ~~[ ] psig~~ |
| c. $T_{avg}$ - Low Low, P-12 | 1,2,3 | [1] per loop | ~~L~~ K | SR 3.3.2.1 4<br>SR 3.3.2.~~5~~ 8<br>SR 3.3.2.9 | ~~≥ [550.6]°F~~ ≥ 540.5 | ~~[553]°F~~ |

8

~~- REVIEWER'S NOTE -~~

~~Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~

19

## *INSERTS FOR ITS 3.3.2, ESFAS*

**INSERT 1 – SR 3.3.2.6 Frequency**

---

Note

Only applicable to Unit 2

---

92 days

OR

---

Note

Only applicable to Unit 2 provided a satisfactory contact loading analysis has been completed, and a satisfactory slave relay service life has been established, for the slave relay being tested.

---

12 Months

AND

---

Note

Only applicable to Unit 1

---

18 Months

# 3.3C
# Engineered Safety Feature Actuation System Instrumentation

## JUSTIFICATIONS FOR DEVIATION

## *ITS 3.3.2 Engineered Safety Feature Actuation System Instrumentation*

JUSTIFICATION FOR DEVIATION (JFD)

1. ISTS Action Condition H is deleted and all subsequent Conditions are re-lettered accordingly. This ISTS Action Condition is one of two Action Conditions that may be applied to the Automatic Actuation Logic and Actuation Relays for the Turbine Trip and Feedwater Isolation Function on ISTS Table 3.3.2-1. The ISTS Table provides a choice of Action Conditions for this Function based on the Applicable Mode specified for the Function's operability. Action Condition H corresponds to an Applicability of Modes 1 and 2 and requires that the plant be placed in Mode 3 if the Action is not met. Action Condition G corresponds to an Applicability of Modes 1-3 and requires that the plant be placed in Mode 4 if the Action is not met. The BVPS ITS Applicability for the affected Function is Modes 1-3. Therefore, Action Condition G is applicable to this BVPS ITS Function. Action Condition H is not used for any other Function on ISTS Table 3.3.2-1 and, therefore, is deleted from the BVPS ITS.

2. ISTS surveillance 3.3.2.3 is deleted. This surveillance requires performance of an Actuation Logic Test and contains a note stating that the continuity check may be excluded. The normal Actuation Logic Test surveillance (ISTS SR 3.3.2.2) without the exception note is retained in the BVPS ITS. The deleted ISTS surveillance (SR 3.3.2.3) is associated solely with the auxiliary feedwater system balance of plant actuation logic and actuation relays function. This ISTS function and associated surveillance SR 3.3.2.3 are intended to address an auxiliary feedwater system design that includes additional actuation logic located outside of the SSPS. Balance of plant auxiliary feedwater actuation logic is a plant specific design feature that is included in some Westinghouse plants. The definition of Actuation Logic Test requires that a continuity check be performed. The continuity check is accomplished as part of the Westinghouse SSPS Actuation Logic Test circuits. The balance of plant actuation logic systems do not have the same test circuits as the Westinghouse SSPS for checking continuity. Therefore, a note containing an exception for the continuity check is necessary in the SR for this plant specific design feature. The BVPS auxiliary feedwater design does not include an actuation logic system outside the Westinghouse SSPS. Therefore, this surveillance is not required and is deleted.

3. The ISTS Slave Relay Test Surveillance Frequency is given as a bracketed (optional) 92 days. This surveillance verifies the operation of the SSPS Relays that are actuated by the SSPS Master Relays. The ISTS surveillance Frequency for BVPS Unit 2 is revised to be consistent with the CTS as revised by Unit 2 Amendment # 141 (issued 5/14/04).

   BVPS Unit 1 currently does not have a specific TS requirement for performing Slave Relay Testing. The adoption of this surveillance for Unit 1 represents a new TS requirement. As such, a plant specific Slave Relay Test Frequency of 18 months is proposed for BVPS Unit 1. The 18-month Frequency is selected because it is consistent with the current Unit 1 practice for testing many of the affected slave relays. In addition, the 18-month Frequency is consistent with other TS requirements for verifying the automatic actuation of ESF components (i.e., pumps and valves) which are initiated by

Slave Relays and tested every 18 months. In addition, the proposed Frequency was selected to minimize the time equipment is out-of-service due to testing and to provide scheduling flexibility. The 18-month Frequency will provide scheduling flexibility that will reduce the potential risk of inadvertent equipment actuations at power and allow the Slave Relay Testing to coincide with other similar ESF component testing and refueling outages if necessary. It should be noted that the proposed Frequency of 18 months for Slave Relay Testing was previously approved by the NRC for the Farley Nuclear Plant in their conversion to the ISTS. The Farley Nuclear Plant did not have specific TS requirements for Slave Relay Testing before converting to the ISTS. The Farley Nuclear Plant and BVPS are similar Westinghouse three loop designs that are close in age as well. As such, operating experience applicable to BVPS confirms that the 18-month surveillance Frequency is adequate to verify the SSPS Actuation Relay operability.

4. The ISTS Conditions and surveillance requirements specified in Table 3.3.2-1 are re-lettered and re-numbered as necessary to account for other changes made to the ISTS Conditions or surveillance requirements that affect the letter or number sequence (see the ISTS pages containing the Actions Conditions or Surveillance Requirements for these other changes). Each change affecting the sequence or placement of the Conditions or surveillances is discussed separately in the JFD associated with that change.

5. The ISTS list of ESFAS Function titles on Table 3.3.2-1 are revised to be consistent with the corresponding BVPS nomenclature. These are non technical changes necessary to preserve the recognized BVPS terminology.

6. ISTS Table 3.3.2-1 contains a column of values for the Allowable Value and a column of values for the Trip Setpoint associated with each ESFAS Function. The corresponding CTS Table 3.3-3 does not contain the Trip Setpoint values for each ESFAS Function. The CTS ESFAS requirements only specify the Allowable Values. The Trip Setpoint values associated with the BVPS ESFAS Functions were relocated outside of the CTS to the Licensing Requirements Manual by a previous license amendment. In addition, the BVPS Unit 1 and Unit 2 ESFAS TS are being combined into a single Unit 1 and Unit 2 TS. As some of the Allowable Values specified in the CTS are different for each Unit, separate Allowable Values columns for each Unit are incorporated into the ISTS Table. The incorporation of the second Allowable Value column replaces the unneeded Trip Setpoint column and maintains the same requirements as specified in the CTS for each BVPS unit. The generic Allowable Values specified in the ISTS have been replaced with the corresponding BVPS Unit 1 and 2 CTS ESFAS values.

7. The ISTS Required Channels specified on Table 3.3.2-1 are revised to be consistent with the corresponding BVPS CTS requirements and the BVPS design. The changes marked in this column represent the current design/licensing basis of BVPS.

8. The ISTS ESFAS Functions and notes listed on Table 3.3.2-1 are comprised of design features found in various Westinghouse type plants. No Westinghouse plant includes all the ESFAS Functions and all the associated footnotes listed in ISTS Table 3.3.2-1. The ESFAS Functions applicable to any given Westinghouse plant depends on a number of design variables that include such things as the basic design (e.g., the number of loops) and the age of the plant, as well as the updates or modifications made by individual plants over time. As such, the list of ESFAS Functions (and associated

footnotes) on ISTS Table 3.3.2-1 are edited to reflect the current BVPS design and licensing basis for the ESFAS. The subsequent Functions and notes are re-numbered and re-lettered as necessary to accommodate the changes. The proposed changes make the generic ISTS ESFAS requirements more consistent with the BVPS CTS requirements for the ESFAS.

9. The ISTS manual steam line isolation ESFAS Function is revised to indicate it is applicable only to Unit 2 and to indicate the train orientation of the manual switches consistent with the ISTS designation used for train oriented switches. As described in the ISTS bases, this manual Function initiates closure of all the steam line isolation valves. Only BVPS Unit 2 has an ESFAS level manual steam line isolation Function that closes all the steam line isolation valves. The Unit 2 train oriented switches utilize the ESFAS steam line isolation train A and B circuitry to accomplish the manual isolation of all the main steam lines. Both BVPS Unit 1 and 2 have individual manual switches for each main steam isolation valve. However, the manual switches associated with each isolation valve are not part of the ESFAS circuitry addressed by ISTS 3.3.2. The operability of individual component controls is associated with the TS applicable to the component. As such, the proposed changes clarify the BVPS Unit 2 specific design.

10. The ISTS main steam line isolation negative steam line pressure rate high Function is required operable in Mode 3. The Mode 3 Applicability is modified by a Note that states the Function is required operable below P-11. However, the ISTS note does not address the BVPS design feature that only permits the negative steam line pressure rate high Function to be enabled at the same time the low steam line pressure SI signal is manually blocked below P-11. The two Functions do not automatically switch at P-11 when decreasing plant pressure during a shutdown. Manual action is required to block the low steam pressure SI signal which also enables the negative steam line pressure rate high Function. This manual action is taken at some point below the P-11 setpoint when decreasing plant pressure during a shutdown. Therefore, the negative steam line pressure rate high Function can not be operable immediately after reaching P-11 during a plant shutdown. However, the unmodified ISTS Note requires the negative steam line pressure rate high Function operable below P-11 without an exception or condition and can be interpreted as an immediate requirement. The corresponding CTS Applicability Note 2 addressed this BVPS design feature and allowed for the delay necessary for bypassing (blocking) the low steam line pressure SI signal below P-11 before requiring the negative steam line pressure rate high Function operable. As such, the provisions of the CTS note that address this design feature are retained in the proposed modification to the ISTS note. The proposed change makes the ISTS requirements conform more closely to the BVPS design and CTS requirements.

11. The ISTS footnotes containing time constant values are deleted and subsequent notes re-lettered as necessary. The required time constant values have been incorporated into the Allowable Value column of ISTS Table 3.3.2-1 without adding additional footnotes. The proposed change is made to provide a more consistent presentation of time constant values in the BVPS ITS Table 3.3.2-1. The proposed time constant values are consistent with the BVPS CTS and do not represent a technical change from the CTS. The proposed change only affects the presentation of this information in the ITS and maintains the Allowable Value requirements in one place on the proposed ITS Table.

12. The ISTS footnote modifying the Feedwater Isolation Function is revised to account for the BVPS design that includes more than one valve that may be used for isolating each Feedwater line. Closure of any one of the feedwater line valves (and its bypass valve if applicable) listed in the note effectively accomplishes the safety function of isolation. Therefore, the ISTS note is revised to allow the isolation function to be performed by either of the alternatives available. The change does not alter the technical intent of the ISTS note and takes into account the BVPS specific design of this system.

13. The ISTS Automatic Actuation Logic and Actuation Relay AFW Function is revised to delete the explanation that the Function is part of the Solid State Protection System (SSPS). The ISTS explanation is only necessary for those plants that are designed with balance of plant AFW actuation logic as well as the standard SSPS actuation logic. The BVPS design does not include a balance of plant automatic actuation logic for the AFW. Therefore, the explanation to distinguish one Function from the other is unnecessary.

14. Not used.

15. ISTS SR 3.3.2.9 assigned to the Trip of All Main Feedwater Pumps Function is deleted consistent with the corresponding BVPS CTS requirements for this Function. ISTS SR 3.3.2.9 specifies the performance of a Channel Calibration every 18 months. The CTS does not require a Channel Calibration for this function. The CTS only specifies a Channel Functional Test every 18 months which is retained in the proposed BVPS ITS requirements for this ESFAS Function as a TADOT. The TADOT is appropriate for this Function as it only consists of breaker and control switch contacts. As such, the proposed change maintains the CTS requirements for this Function.

16. The ISTS Action Condition applicable to the Automatic Actuation Logic for the Auto Switchover to Containment Sump is revised from Condition C to Condition B. The ISTS Action Condition C allows 6 hours to restore an inoperable Actuation Logic train. The corresponding CTS Action 18 for this Function provides 48 hours to restore an inoperable Actuation Logic Train. The ISTS is revised to be consistent with the CTS Actions for this Function. This results in ISTS Action Condition B being applied to this Function in lieu of ISTS Action Condition C. The CTS Action for this Function is appropriate considering that the Function is not required until some time after initiation of an accident (when the RWST level has decreased to the appropriate setpoint) and the fact that sufficient time would be available to accomplish the function manually if required. As such, the revised Action continues to provide adequate assurance the affected logic train is restored to operable status in a timely manner or the plant is placed in a Mode where the Function is no longer required. In addition, the proposed 48-hour Action allowance was previously approved by the NRC as part of the CTS.

17. The ISTS Auto Switchover to Containment Sump Function includes requirements for Actuation Relays and the associated Slave Relay Test. The Corresponding CTS Function does not contain these requirements. The ISTS is revised to conform to the CTS. This changes the ISTS by eliminating the requirements for Actuation Relays and the associated Slave Relay Test. The CTS requirements for this Function are based on the potential for damaging the associated equipment (high and low head pumps) if testing were performed at power. The BVPS relays associated with this Function are tested every 18 months during shutdown conditions (when the potential for equipment damage is minimized) consistent with the TS surveillance requirements (ITS 3.5.2 and 3.5.3) to verify ECCS

valves actuate to the correct positions on a simulated or actual actuation signal. The proposed change to the ISTS maintains the current BVPS licensing basis for testing this Function as previously approved by the NRC and documented in the CTS.

18. The ISTS surveillance requirements for the RWST Level instrumentation associated with the Auto Switchover to Containment Sump Function include response time testing (ISTS SR 3.3.2.10). The specific CTS response time test criteria for each ESFAS Function (contained in the LRM) does not include a response time for the RWST Level instrumentation. The LRM contains the specific actuation times assumed in the safety analyses for the ESFAS Functions. The BVPS RWST instrumentation does not have a specified response time that must be routinely verified to confirm the operability of this Function. Therefore, the CTS does not require response time testing of the RWST level instrumentation. The proposed change eliminates the ISTS requirement to response time test this instrumentation. This change to the ISTS maintains the current BVPS design and licensing basis for this instrumentation.

19. The ISTS Reviewers Note explaining the allowance that only the Allowable Value may be contained within the TS depending on the setpoint study utilized by an individual plant is deleted. BVPS has already licensed a single Allowable Value in the TS for each ESFAS Function. As such, the implementation of the provisions of this Note is consistent with the CTS requirements previously approved by the NRC. The Note is not required in the BVPS ITS.

20. ISTS SR 3.3.2.8 (ITS SR 3.3.2.7) is modified by a note that excepts setpoint verification for manual initiation channels as these channels have no setpoint to verify. The ISTS Note is revised to address more than the manual initiation channels. In the ISTS, this surveillance is only applicable to the manual initiation functions. In the BVPS specific implementation of ISTS 3.3.2, ITS SR 3.3.2.7 is also applicable to the Main Feedwater (MFW) pump trip function used to start the AFW pumps and the P-4 interlock. The BVPS MFW pump trip function is based on breaker and switch position contacts and has no setpoint associated with it. Similarly, the P-4 interlock is based on reactor trip breaker position. The closest ISTS surveillance requirement that corresponds to the CTS surveillance for these BVPS functions is ISTS SR 3.3.2.8 (an 18-month TADOT for manual switches). As the BVPS MFW pump trip function and P-4 interlock are based on contact position, similar to the manual switches addressed by ISTS SR 3.3.2.8, ISTS SR 3.3.2.8 is appropriate for the BVPS MFW pump trip function. Therefore, the note modifying this ISTS surveillance is revised to accommodate the BVPS MFW pump trip function and P-4 interlock as well as the manual initiation functions.

21. ISTS surveillance SR 3.3.2.11 is only applicable to the P-4 interlock function and requires this function to be tested by a TADOT once per breaker cycle (i.e., reactor trip breaker (RTB) cycle). The ISTS surveillance is deleted from the BVPS specific ITS. In place of ISTS 3.3.2.11, the BVPS ITS uses ITS 3.3.2.7 (ISTS 3.3.2.8). ITS 3.3.2.7 specifies a TADOT be performed on the P-4 interlock once every 18 months consistent with the frequency of testing in the CTS.

    The CTS and ISTS require bimonthly testing of the SSPS that includes cycling the RTBs. Although the bimonthly SSPS testing does not specifically require testing the P-4 interlock, it does result in verifying the operation of the P-4 interlock when the RTBs are cycled. However, the CTS surveillance requirements only specify that the P-4 interlock operation be verified every 18 months. The CTS requirements for a specific 18 month surveillance test of the P-4 interlock and the bimonthly surveillance testing of the SSPS have been shown by both Unit 1 and 2 operating experience to be adequate to ensure the P-4 interlock is maintained operable. Therefore, the proposed ITS surveillance frequency for the P-4 interlock is revised to be consistent with the corresponding CTS.

ENCLOSURE 2

***CHANGES TO THE ISTS BASES***

MARKUP TO SHOW BVPS PLANT SPECIFIC DIFFERENCES &

JUSTIFICATION FOR DEVIATION (JFD)

FROM THE STANDARD BASES

Introduction

This enclosure contains the markup of the Improved Standard Technical Specifications (ISTS) Bases to show the changes necessary to make the ISTS Bases document specific to BVPS Units 1 and 2. Changes to the ISTS Bases are identified with a number. The number is associated with a JFD that describes the reason for the change. The markups of the ISTS Bases are followed by a document containing the numbered JFDs for the changes made to the ISTS Bases. Not every change to the ISTS Bases is identified and explained by a JFD. Changes that simply insert current Technical Specification (CTS) information into bracketed (optional) ISTS text are not typically identified with a separate JFD. Bracketed ISTS text identifies specific text that is to be replaced with the corresponding CTS information. Therefore, such changes to the ISTS Bases are self-explanatory and represent the simple transference of CTS requirements to the ISTS. Other changes to the ISTS (i.e., less obvious changes) are described by a JFD.

As the BVPS Unit 1 & 2 Technical Specifications (TS) are being combined into a single set of TS, one markup of each ISTS Bases is provided for both Unit 1 and 2. Unit differences are identified in each ISTS Bases.

In addition, the Bases in this enclosure are marked (where applicable) to show the changes to the standard text resulting from the Industry/NRC TS Task Force (TSTF) process. The TSTF revisions to the standard are marked-up and identified with the applicable TSTF number (i.e., TSTF-03, TSTF-19, etc.). Each TSTF change has its own justification associated with it as part of the Industry/NRC process. The TSTF justifications are not repeated in the BVPS ISTS conversion documentation.

B 3.3 INSTRUMENTATION

B 3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation

BASES

1

BACKGROUND

The ESFAS initiates necessary safety systems, based on the values of selected unit parameters, to protect against violating core design limits and the Reactor Coolant System (RCS) pressure boundary, and to mitigate accidents.

The ESFAS instrumentation is segmented into three distinct but interconnected modules as identified below.

- Field transmitters or process sensors and instrumentation: provide a measurable electronic signal based on the physical characteristics of the parameter being measured,
- Signal processing equipment including analog protection system, field contacts, and protection channel sets: provide signal conditioning, bistable setpoint comparison, process algorithm actuation, compatible electrical signal output to protection system devices, and control board/control room/miscellaneous indications, and
- Solid State Protection System (SSPS) including input, logic, and output bays: initiates the proper unit shutdown or engineered safety feature (ESF) actuation in accordance with the defined logic and based on the bistable outputs from the signal process control and protection system.

2

nominal

The nominal trip setpoints are specified in the Licensing Requirements Manual (LRM).

The Allowable Value in conjunction with the trip setpoint and LCO establishes the threshold for ESFAS action to prevent exceeding acceptable limits such that the consequences of Design Basis Accidents (DBAs) will be acceptable. ~~The Allowable Value is considered a limiting value such that a channel is OPERABLE if the setpoint is found not to exceed the Allowable Value during the CHANNEL OPERATIONAL TEST (COT). Note that, although a channel is "OPERABLE" under these circumstances, the ESFAS setpoint must be left adjusted to within the established calibration tolerance band of the ESFAS setpoint in accordance with the uncertainty assumptions stated in the referenced setpoint methodology, (as-left criteria) and confirmed to be operating within the statistical allowances of the uncertainty terms assigned.~~

BASES

BACKGROUND (continued)

3

in some cases

Field Transmitters or Sensors

~~To meet~~ the design demands for redundancy and reliability, more than one, and ~~often~~ as many as four, field transmitters or sensors are used to measure unit parameters. In many cases, field transmitters or sensors that input to the ESFAS are shared with the Reactor Trip System (RTS). In some cases, the same channels also provide control system inputs. To account for calibration tolerances and instrument drift, which are assumed to occur between calibrations, statistical allowances are provided in the trip setpoint ~~and Allowable Values~~. The OPERABILITY of each transmitter or sensor is determined by either "as-found" calibration data evaluated during the CHANNEL CALIBRATION or by qualitative assessment of field transmitter or sensor, as related to the channel behavior observed during performance of the CHANNEL CHECK.

2

nominal

Signal Processing Equipment

Generally, three or four channels of process control equipment are used for the signal processing of unit parameters measured by the field instruments. The process control equipment provides signal conditioning, comparable output signals for instruments located on the main control board, and comparison of measured input signals with setpoints established by safety analyses. ~~These setpoints are defined in FSAR, Chapter [6] (Ref. 1), Chapter [7] (Ref. 2), and Chapter [15] (Ref. 3).~~ If the measured value of a unit parameter exceeds the predetermined setpoint, an output from a bistable is forwarded to the SSPS for decision evaluation. Channel separation is maintained up to and through the input bays. However, not all unit parameters require four channels of sensor measurement and signal processing. Some unit parameters provide input only to the SSPS, while others provide input to the SSPS, the main control board, the unit computer, and one or more control systems.

The safety analyses and associated ESFAS Functions are discussed in UFSAR Chapter 14 (Unit 1) and UFSAR Chapter 15 (Unit 2) (Ref. 1).

or other trip device

3

Generally, if a parameter is used only for input to the protection circuits, three channels with a two-out-of-three logic are sufficient to provide the required reliability and redundancy. If one channel fails in a direction that would not result in a partial Function trip, the Function is still OPERABLE with a two-out-of-two logic. If one channel fails such that a partial Function trip occurs, a trip will not occur and the Function is still OPERABLE with a one-out-of-two logic.

Generally, if a parameter is used for input to the SSPS and a control function, four channels with a two-out-of-four logic are sufficient to

BASES

BACKGROUND (continued)

3

However, exceptions to the requirement for four channels are part of the design and licensing basis of the ESFAS (e.g. steam generator level instrumentation).

provide the required reliability and redundancy. The circuit must be able to withstand both an input failure to the control system, which may then require the protection function actuation, and a single failure in the other channels providing the protection function actuation. Again, a single failure will neither cause nor prevent the protection function actuation.

These requirements are described in IEEE-279-1971 (Ref. 4). The ~~actual~~ number of channels required for each unit parameter is specified in ~~Reference 2~~.

2

Technical Specification Table 3.3.2-1

nominal

and other trip devices

Allowable Values and ESFAS Setpoints

the BVPS Unit 1 and Unit 2 setpoint methodology for protection systems (Ref. 3).

The trip setpoints used in the bistables are based on the analytical limits stated in ~~Reference 2~~. The selection of these trip setpoints is such that adequate protection is provided when all sensor and processing time delays are taken into account. ~~To allow for calibration tolerances, instrumentation uncertainties, instrument drift, and severe environment errors for those ESFAS channels that must function in harsh environments as defined by 10 CFR 50.49 (Ref. 5), the Allowable Values specified in Table 3.3.2-1 in the accompanying LCO are conservative with respect to the analytical limits.~~ A detailed description of ~~the~~ methodology used to calculate the Allowable Values and ~~ESFAS~~ setpoints including their explicit uncertainties, is provided in ~~the plant specific setpoint methodology study (Ref. 6)~~ which incorporates all of the known uncertainties applicable to each channel. The magnitudes of these uncertainties are factored into the determination of each ~~ESFAS~~ setpoint and corresponding Allowable Value. The ~~nominal ESFAS~~ setpoint entered into the ~~bistable~~ is more conservative than that specified by the Allowable Value to account for measurement errors detectable by the COT. The Allowable Value serves as the Technical Specification OPERABILITY limit for the purpose of the COT. One example of such a change in measurement error is drift during the surveillance interval. If the measured setpoint does not exceed the Allowable Value, the ~~bistable~~ is considered OPERABLE.

INSERT 1

Insert pages follow the Bases pages.

nominal trip

Reference 3

nominal trip

trip device

2

channel

nominal trip

trip devices

s

are

The ~~ESFAS~~ setpoints are the values at which the ~~bistables~~ are set ~~and is~~ the expected value to be achieved during calibration. The ~~ESFAS~~ setpoint value ensures the safety analysis limits are met for the surveillance interval selected when a channel is adjusted ~~based on stated channel uncertainties~~. Any ~~bistable~~ is considered to be properly adjusted when the "as-left" setpoint value is within the ~~band for CHANNEL CALIBRATION uncertainty allowance (i.e., calibration tolerance uncertainties). The ESFAS setpoint value is therefore considered a~~

to be within the calibration tolerance.

trip device with a nominal trip setpoint

calibration tolerance.

2

BACKGROUND (continued)

~~"nominal value" (i.e., expressed as a value without inequalities) for the purposes of the COT and CHANNEL CALIBRATION.~~

Operable ESFAS Functions with setpoints maintained within the Allowable Values specified in the Technical Specifications

~~Setpoints adjusted consistent with the requirements of the Allowable Value~~ ensure that the consequences of Design Basis Accidents (DBAs) will be acceptable, providing the unit is operated from within the LCOs at the onset of the DBA and the equipment functions as designed.

except for manual initiation channels and the trip of all main feedwater pump channels,

Each channel can be tested on line to verify that the signal processing equipment and setpoint accuracy is within the specified allowance requirements of Reference 2. Once a designated channel is taken out of service for testing, a simulated signal is injected in place of the field instrument signal. The process equipment for the channel in test is then tested, verified, and calibrated. SRs for the channels are specified in the SR section.

3

3

3

inputs from field contacts, control board switches and

Solid State Protection System

The SSPS equipment is used for the decision logic processing of ~~outputs from~~ the signal processing equipment bistables. To meet the redundancy requirements, two trains of SSPS, each performing the same functions, are provided. If one train is taken out of service for maintenance or test purposes, the second train will provide ESF actuation for the unit. If both trains are taken out of service or placed in test, a reactor trip will result. Each train is packaged in its own cabinet for physical and electrical separation to satisfy separation and independence requirements.

The SSPS performs the decision logic for most ESF equipment actuation; generates the electrical output signals that initiate the required actuation; and provides the status, permissive, and annunciator output signals to the main control room of the unit.

input signals from field contacts, control board switches and

The bistable outputs from the signal processing equipment are sensed by the SSPS equipment and combined into logic matrices that represent combinations indicative of various transients. If a required logic matrix combination is completed, the system will send actuation signals via master and slave relays to those components whose aggregate Function best serves to alleviate the condition and restore the unit to a safe condition. Examples are given in the Applicable Safety Analyses, LCO, and Applicability sections of this Bases.

3

Each SSPS train has a built in testing device that can automatically test the decision logic matrix functions and the actuation ~~devices~~ while the

selected

partially test

relays

BACKGROUND (continued)

unit is at power. When any one train is taken out of service for testing, the other train is capable of providing unit monitoring and protection until the testing has been completed. The testing device is semiautomatic to minimize testing time.

that provide actuation signals to ESF components

3

The actuation of ESF components is accomplished through master and slave relays. The SSPS energizes the master relays appropriate for the condition of the unit. Each master relay then energizes one or more slave relays, which then cause actuation of the end devices. The master and slave relays are routinely tested to ensure operation. The test of the master relays energizes the relay, which then operates the contacts and applies a low voltage to the associated slave relays. The low voltage is not sufficient to actuate the slave relays but only demonstrates signal path continuity. The SLAVE RELAY TEST actuates the devices if their operation will not interfere with continued unit operation. For the latter case, actual component operation is prevented ~~by the SLAVE RELAY TEST circuit~~, and slave relay contact operation is verified by a continuity check of the circuit containing the slave relay.

- REVIEWER'S NOTE -

No one unit ESFAS incorporates all of the Functions listed in Table 3.3.2-1. In some cases (e.g., Containment Pressure - High 3, Function 2.c), the Table reflects several different implementations of the same Function. Typically, only one of these implementations are used at any specific unit.

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

Each of the analyzed accidents can be detected by one or more ESFAS Functions. One of the ESFAS Functions is the primary actuation signal for that accident. An ESFAS Function may be the primary actuation signal for more than one type of accident. An ESFAS Function may also be a secondary, or backup, actuation signal for one or more other accidents. ~~For example, Pressurizer Pressure - Low is a primary actuation signal for small loss of coolant accidents (LOCAs) and a backup actuation signal for steam line breaks (SLBs) outside containment.~~ Functions ~~such as manual initiation,~~ not ~~specifically~~ explicitly credited in the ~~accident~~ safety analysis, ~~are qualitatively~~ may be implicitly credited in the safety analysis and the NRC staff approved licensing basis for the unit. These Functions may provide protection for conditions ~~that do not require dynamic transient analysis to demonstrate Function performance. These Functions may also~~ not explicitly analyzed and may be anticipatory in nature or serve as backups to Functions that ~~were~~ are explicitly credited in the accident analysis to provide defense in depth. (Ref. ~~3~~ 1).

3

BASES

CTS Bases

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

provided that the ± calibration tolerance band remains the same and the Allowable Value is administratively controlled accordingly in the conservative direction to meet the assumptions of the setpoint methodology. The conservative direction is established by the direction of the inequality applied to the Allowable Value.

2

The LCO requires all instrumentation performing an ESFAS Function to be OPERABLE. A channel is OPERABLE ~~with a trip setpoint value outside its calibration tolerance band~~ provided the trip setpoint "as-found" value does not exceed its associated Allowable Value and provided the trip setpoint "as-left" value is adjusted to a value within the calibration tolerance band of the nominal trip setpoint. A trip setpoint may ~~be set~~ more conservative than the nominal trip setpoint as necessary in response to plant conditions. Failure of any instrument renders the affected channel(s) inoperable and reduces the reliability of the affected Functions.

2

may

The LCO generally requires OPERABILITY of four or three channels in each instrumentation function and two channels in each logic and manual initiation function. The two-out-of-three and the two-out-of-four configurations allow one channel to be tripped during maintenance or testing without causing an ESFAS initiation. Two logic or manual initiation channels are required to ensure no single random failure disables the ESFAS.

The required channels of ESFAS instrumentation provide unit protection in the event of any of the analyzed accidents. ESFAS protection functions are as follows:

1. Safety Injection

   Safety Injection (SI) provides two primary functions:

   1. Primary side water addition to ensure maintenance or recovery of reactor vessel water level (coverage of the active fuel for heat removal, clad integrity, and for limiting peak clad temperature to ≤ 2200°F), and

   2. Boration to ensure recovery and maintenance of SDM ($k_{eff}$ < 1.0).

   These functions are necessary to mitigate the effects of high energy line breaks (HELBs) both inside and outside of containment. The SI signal is also used to initiate other Functions such as:

   - Phase A Isolation,
   - ~~Containment Purge Isolation,~~

3

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

- Reactor Trip,
- Turbine Trip,
- Feedwater Isolation,
- Start of ~~motor-driven~~ auxiliary feedwater (AFW) pumps,
- ~~Control room ventilation isolation,~~ and
- Enabling automatic switchover of Emergency Core Cooling Systems (ECCS) suction to containment sump.

These other functions ensure:

- Isolation of nonessential systems through containment penetrations,
- Trip of the turbine and reactor to limit power generation,
- Isolation of main feedwater (MFW) to limit secondary side mass losses,
- Start of AFW to ensure secondary side cooling capability,
- ~~Isolation of the control room to ensure habitability,~~ and
- Enabling ECCS suction from the refueling water storage tank (RWST) switchover on low ~~low~~ RWST level to ensure continued cooling via use of the containment sump.

3

(Unit 1) and extreme low (Unit 2)

<u>Safety Injection - Manual Initiation</u>

The LCO requires one channel per train to be OPERABLE. The operator can initiate SI at any time by using either of two switches in the control room. This action will cause actuation of all components in the same manner as any of the automatic actuation signals.

except for the Unit 1 automatic high head safety injection (HHSI) flow path isolation valves when LCO 3.4.12, "Overpressure Protection Systems," is applicable. Consistent with the requirements of LCO 3.4.12, in MODE 4 when any RCS cold leg temperature is ≤ the enable temperature specified in the PTLR, the Unit 1 automatic HHSI flow path must be isolated with power removed from the isolation valves. Therefore, when operating in the MODE 4 Applicability of LCO 3.4.12, the manual initiation of Unit 1 SI will require additional manual valve operation to establish an SI injection flow path.

The LCO for the Manual Initiation Function ensures the proper amount of redundancy is maintained in the manual ESFAS actuation circuitry to ensure the operator has manual ESFAS initiation capability.

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

switch

Each channel consists of one ~~push button~~ and the interconnecting wiring to the actuation logic cabinet. Each ~~push button~~ actuates both trains. This configuration does not allow testing at power.

From CTS Actions

3

In the event an inadvertent SI is initiated, the block of the automatic actuation logic introduced by a reset of safety injection must be removed by resetting (closure) of the reactor trip breakers after the inadvertent initiation providing that all trip input signals have reset due to stable plant conditions. When the Automatic Actuation Logic is required OPERABLE and is blocked after an inadvertent SI, the affected train(s) of Automatic Actuation Logic are considered inoperable and the Technical Specification ACTIONS are applicable until the Automatic Actuation Logic is restored to OPERABLE status.

b. Safety Injection - Automatic Actuation Logic and Actuation Relays

This LCO requires two trains to be OPERABLE. Actuation logic consists of all circuitry housed within the actuation subsystems, including the initiating relay contacts responsible for actuating the ESF equipment.

Manual and automatic initiation of SI must be OPERABLE in MODES 1, 2, and 3. In these MODES, there is sufficient energy in the primary and secondary systems to warrant automatic initiation of ESF systems. Manual Initiation is also required in MODE 4 even though automatic actuation is not required. In this MODE, adequate time is available to manually actuate required components in the event of a DBA, but because of the large number of components actuated on a SI, actuation is simplified by the use of the manual actuation ~~push buttons~~. Automatic actuation logic and actuation relays must be OPERABLE in MODE 4 to support system level manual initiation.

switches

3

, however only the actuation relays are required

These Functions are not required to be OPERABLE in MODES 5 and 6 because there is adequate time for the operator to evaluate unit conditions and respond by manually starting individual systems, pumps, and other equipment to mitigate the consequences of an abnormal condition or accident. Unit pressure and temperature are very low and many ESF components are administratively locked out or otherwise prevented from actuating to prevent inadvertent overpressurization of unit systems.

3

c. Safety Injection - Containment Pressure - High ~~1~~

This signal provides protection against the following accidents:

- SLB inside containment,
- ~~LOCA,~~ and

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

- *Feed line break inside containment.* 3

Containment Pressure - High ~~1~~ provides no input to any control functions. Thus, three OPERABLE channels are sufficient to satisfy protective requirements with a two-out-of-three logic.

4

The ~~transmitters (d/p~~ cells) and electronics ~~are located outside~~ of containment with the ~~sensing line (high~~ pressure side of the ~~transmitter) located~~ inside containment.

~~Thus, t~~The high pressure Function will not experience any adverse environmental conditions and the Trip Setpoint reflects only steady state instrument uncertainties.

3

Containment Pressure - High ~~1~~ must be OPERABLE in MODES 1, 2, and 3 when there is sufficient energy in the primary and secondary systems to pressurize the containment following a pipe break. In MODES 4, 5, and 6, there is insufficient energy in the primary or secondary systems to pressurize the containment.

d. <u>Safety Injection - Pressurizer Pressure - Low</u>

The Pressurizer Pressure - Low protection Function provides no input to any control functions. Pressurizer pressure control is accomplished by two separate channels independent of the pressurizer pressure protection channels used for ESFAS. Thus, three OPERABLE channels are sufficient to satisfy protective requirements with a two-out-of-three logic.

This signal provides protection against the following accidents:

- Inadvertent opening of a steam generator (SG) relief or safety valve,
- SLB,
- A spectrum of rod cluster control assembly ejection accidents (rod ejection),
- Inadvertent opening of a pressurizer relief or safety valve,
- LOCAs, and
- SG Tube Rupture.

3

At ~~some units~~ pressurizer pressure provides both ~~control and~~ protection ~~functions: input~~ to the Pressurizer ~~Pressure~~ Control System, reactor trip, and SI. ~~Therefore~~, the actuation logic must be able to withstand ~~both~~ an input failure ~~to control~~ system, ~~which may~~ then require the protection function

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3

4

~~actuation, and a single failure in the other channels providing the protection function actuation. Thus, four OPERABLE channels are required to satisfy the requirements with a two-out-of-four logic. For units that have dedicated protection and control channels, only three protection channels are necessary to satisfy the protective requirements.~~

could

e

The transmitters ~~are located inside containment, with the taps in the vapor space region of the pressurizer, and thus possibly~~ experiencing adverse environmental conditions (LOCA, SLB inside containment, rod ejection). Therefore, the Trip Setpoint reflects the inclusion of both steady state and adverse environmental instrument uncertainties.

This Function must be OPERABLE in MODES 1, 2, and 3 (above P-11) to mitigate the consequences of an HELB inside containment. This signal may be manually blocked by the operator below the P-11 setpoint. Automatic SI actuation below this pressure setpoint is then performed by the Containment Pressure - High ~~1~~ signal.

3

This Function is not required to be OPERABLE in MODE 3 below the P-11 setpoint. Other ESF functions are used to detect accident conditions and actuate the ESF systems in this MODE. In MODES 4, 5, and 6, this Function is not needed for accident detection and mitigation.

e. Safety Injection - Steam Line Pressure - Low

~~(1) Steam Line Pressure - Low~~

Steam Line Pressure - Low provides protection against the following accidents:

- SLB,
- Feed line break, and
- Inadvertent opening of an SG relief or an SG safety valve.

also

steam generator level

Steam Line Pressure - Low also provides ~~no~~ input to any steam generator level control functions. Thus, three OPERABLE channels on

however, only three OPERABLE channels per steam line are provided. If a steam pressure sensor fails high or low, the steam generator level control system would eventually recover based upon the level input alone, assuming that a high level or low level trip setpoint is not reached. If the steam generator level setpoint is reached and protective action is required, a reactor trip (on low steam generator level) or turbine trip (on high steam generator level) occurs automatically. In this case, steam generator level is used to mitigate the event and not steam pressure. A single failure in a steam generator level channel could be assumed, however the reactor trip would still occur on steam generator level. A second failure in another steam pressure transmitter would not preclude a trip from occurring on steam generator level.

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

each steam line are sufficient to satisfy the protective requirements with a two-out-of-three logic on each steam line.

4

The Unit 1 transmitters will not experience adverse environmental conditions during a secondary side break. The Unit 2 transmitters are located where they may experience adverse environmental conditions during a secondary side break outside containment. However, for Unit 2, the safety analysis limit for the steam line break inside containment is more limiting than the safety analysis limit for the steam line break outside containment. As such, the Unit 2 Trip Setpoint is based on the more limiting result of the safety analysis for a steam line break inside containment which does not require an adverse environmental uncertainty. The magnitude of the difference between the inside and outside safety analysis limits is greater than or equal to the potential error that could result from an adverse environment. Therefore, the trip setpoints for both units only reflect steady state instrument uncertainties.

~~With the transmitters typically located inside the steam tunnels, it is possible for them to experience adverse environmental conditions during a secondary side break. Therefore, the Trip Setpoint reflects both steady state and adverse environmental instrument uncertainties.~~

3

This Function is anticipatory in nature and has a ~~typical~~ lead/lag ratio of 50/5.

Steam Line Pressure - Low must be OPERABLE in MODES 1, 2, and 3 (above P-11) when a secondary side break or stuck open valve could result in the rapid depressurization of the steam lines. This signal may be manually blocked by the operator below the P-11 setpoint. Below P-11, feed line break is not a concern. Inside containment SLB will be terminated by automatic ~~SI actuation via Containment Pressure—High 1~~ steam line isolation via Containment Pressure Intermediate High-High, and outside containment SLB will be terminated by the Steam Line Pressure - Negative Rate - High signal for steam line isolation. This Function is not required to be OPERABLE in MODE 4, 5, or 6 because there is insufficient energy in the secondary side of the unit to cause an accident.

3

N/A for BVPS

~~(2) Steam Line Pressure - High Differential Pressure Between Steam Lines~~

~~Steam Line Pressure - High Differential Pressure Between Steam Lines provides protection against the following accidents:~~

- ~~SLB,~~
- ~~Feed line break, and~~
- ~~Inadvertent opening of an SG relief or an SG safety valve.~~

~~Steam Line Pressure - High Differential Pressure Between Steam Lines provides no input to any control functions.~~

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3

N/A for BVPS

Thus, three OPERABLE channels on each steam line are sufficient to satisfy the requirements, with a two-out-of-three logic on each steam line.

With the transmitters typically located inside the steam tunnels, it is possible for them to experience adverse environmental conditions during an SLB event. Therefore, the Trip Setpoint reflects both steady state and adverse environmental instrument uncertainties. Steam line high differential pressure must be OPERABLE in MODES 1, 2, and 3 when a secondary side break or stuck open valve could result in the rapid depressurization of the steam line(s). This Function is not required to be OPERABLE in MODE 4, 5, or 6 because there is not sufficient energy in the secondary side of the unit to cause an accident.

f, g. <u>Safety Injection - High Steam Flow in Two Steam Lines Coincident With $T_{avg}$ - Low Low or Coincident With Steam Line Pressure - Low</u>

These Functions (1.f and 1.g) provide protection against the following accidents:

- SLB, and
- the inadvertent opening of an SG relief or an SG safety valve.

Two steam line flow channels per steam line are required OPERABLE for these Functions. The steam line flow channels are combined in a one-out-of-two logic to indicate high steam flow in one steam line. The steam flow transmitters provide control inputs, but the control function cannot cause the events that the Function must protect against. Therefore, two channels are sufficient to satisfy redundancy requirements. The one-out-of-two configuration allows online testing because trip of one high steam flow channel is not sufficient to cause initiation. High steam flow in two steam lines is acceptable in the case of a single steam line fault due to the fact that the remaining intact steam lines will pick up the full turbine load. The increased steam flow in the remaining intact lines will actuate the required second high steam flow trip. Additional

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3

N/A for BVPS

protection is provided by Function 1.e.(2), High Differential Pressure Between Steam Lines.

One channel of $T_{avg}$ per loop and one channel of low steam line pressure per steam line are required OPERABLE. For each parameter, the channels for all loops or steam lines are combined in a logic such that two channels tripped will cause a trip for the parameter. For example, for three loop units, the low steam line pressure channels are combined in two-out-of- three logic. Thus, the Function trips on one-out-of-two high flow in any two-out-of-three steam lines if there is one-out-of-one low low $T_{avg}$ trip in any two-out-of-three RCS loops, or if there is a one-out-of-one low pressure trip in any two-out-of-three steam lines. Since the accidents that this event protects against cause both low steam line pressure and low low $T_{avg}$, provision of one channel per loop or steam line ensures no single random failure can disable both of these Functions. The steam line pressure channels provide no control inputs. The $T_{avg}$ channels provide control inputs, but the control function cannot initiate events that the Function acts to mitigate.

The Allowable Value for high steam flow is a linear function that varies with power level. The function is a ΔP corresponding to 44% of full steam flow between 0% and 20% load to 114% of full steam flow at 100% load. The nominal trip setpoint is similarly calculated.

With the transmitters typically located inside the containment ($T_{avg}$) or inside the steam tunnels (High Steam Flow), it is possible for them to experience adverse steady state environmental conditions during an SLB event. Therefore, the Trip Setpoint reflects both steady state and adverse environmental instrument uncertainties. The Steam Line Pressure - Low signal was discussed previously under Function 1.e.(1).

This Function must be OPERABLE in MODES 1, 2, and 3 (above P-12) when a secondary side break or stuck open valve could result in the rapid depressurization of the steam line(s). This signal may be manually blocked by the operator when below the P-12 setpoint. Above P-12, this Function is automatically unblocked. This Function is not required

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3

N/A for BVPS

~~OPERABLE below P-12 because the reactor is not critical, so feed line break is not a concern. SLB may be addressed by Containment Pressure High 1 (inside containment) or by High Steam Flow in Two Steam Lines coincident with Steam Line Pressure - Low, for Steam Line Isolation, followed by High Differential Pressure Between Two Steam Lines, for SI. This Function is not required to be OPERABLE in MODE 4, 5, or 6 because there is insufficient energy in the secondary side of the unit to cause an accident.~~

2. Containment Spray

3

Containment Spray provides ~~three~~ five primary functions:

1. Lowers containment pressure and temperature after an HELB in containment,
2. Reduces the amount of radioactive iodine in the containment atmosphere, ~~and~~
3. Adjusts the pH of the water in the containment recirculation sump after a large break LOCA,

4. Mixes the containment atmosphere and minimizes the amount of hydrogen accumulation, and

5. Removes containment heat.

These functions are necessary to:

- Ensure the pressure boundary integrity of the containment structure,
- Limit the release of radioactive iodine to the environment in the event of a failure of the containment structure, ~~and~~
- Minimize corrosion of the components and systems inside containment following a LOCA~~.~~,

- Control subcompartment and general area hydrogen concentrations to less than 4% by volume, and
- Remove decay heat to ensure that the containment gas and sump water temperatures are within the containment liner and piping thermal stress limits.

The containment spray actuation signal starts the ~~containment~~ Quench spray pumps and aligns the discharge of the pumps to the containment spray nozzle headers in the upper levels of containment. Water is ~~initially~~ drawn from the RWST by the ~~containment~~ Quench spray pumps and mixed with a sodium hydroxide solution from the spray additive tank. The Quench Spray pumps are manually stopped after recirculation operation is established. The Recirculation Spray pumps are started automatically after a specified time delay and take suction from the containment sump to continue containment spray. ~~When the RWST reaches the low-low level setpoint, the spray pump suctions are shifted to the containment sump if continued containment spray is required.~~ Containment spray is actuated

BASES

or

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3

manually by ~~Containment Pressure—High 3 or~~ Containment Pressure - High-High.

a. Containment Spray - Manual Initiation

actuating

The operator can initiate containment spray at any time from the control room by simultaneously ~~turning~~ two containment spray actuation switches in the same train. Because an inadvertent actuation of containment spray could have ~~such serious~~ consequences, two switches must be ~~turned~~ simultaneously to initiate containment spray. There are two sets of two switches each in the control room. Simultaneously ~~turning~~ the two switches in either set will actuate containment spray in both trains ~~in the same manner as the automatic actuation signal.~~ Two Manual Initiation switches in each train are required to be OPERABLE to ensure no single failure disables the Manual Initiation Function. Note that Manual Initiation of containment spray also actuates Phase B containment isolation.

undesirable

actuated

actuating

in Unit 2 and one train in Unit 1.

Function 1.b text

This LCO requires two trains to be OPERABLE. Actuation logic consists of all circuitry housed within the actuation subsystems, including the initiating relay contacts responsible for actuating the ESF equipment.

b. Containment Spray - Automatic Actuation Logic and Actuation Relays

~~Automatic actuation logic and actuation relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.~~

Manual and automatic initiation of containment spray must be OPERABLE in MODES 1, 2, and 3 when there is a potential for an accident to occur, and sufficient energy in the primary or secondary systems to pose a threat to containment integrity due to overpressure conditions. Manual initiation is also required in MODE 4, even though automatic actuation is not required. In this MODE, adequate time is available to manually actuate required components in the event of a DBA. However, because of the large number of components actuated on a containment spray, actuation is simplified by the use of the manual actuation ~~push buttons~~. Automatic actuation logic and actuation relays must be OPERABLE in MODE 4 to support system level manual initiation. ~~In MODES~~ 5 and 6, there is insufficient energy ~~in the~~ primary and secondary systems to ~~result in~~ containment overpressure. In MODES 5 and 6, there is also adequate time for the operators to evaluate unit

3

switches

, however only the actuation relays are required

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

conditions and respond, to mitigate the consequences of abnormal conditions by manually starting individual components.

c. Containment Spray - Containment Pressure - High-High

4

This signal provides protection against a LOCA or an SLB inside containment. ~~The transmitters (d/p cells) are located outside of containment with the sensing line (high pressure side of the transmitter) located inside containment.~~ The transmitters ~~and electronics~~ are located outside of containment. Thus, they will not experience any adverse environmental conditions and the Trip Setpoint reflects only steady state instrument uncertainties.

3

This is one of two ~~the only~~ Functions that requires the bistable output to energize to perform its required action. It is not desirable to have a loss of power actuate containment spray, due to ~~since~~ the consequences of an inadvertent actuation of containment spray ~~could be serious~~. Note that this Function also has the inoperable channel placed in bypass rather than trip to decrease the probability of an inadvertent actuation.

~~Two different logic configurations are typically used. Three and four loop units use~~ This Function uses four channels in a two-out-of-four logic configuration. ~~This configuration may be called the Containment Pressure - High 3 Setpoint for three and four loop units, and Containment Pressure - High High Setpoint for other units. Some two loop units use three sets of two channels, each set combined in a one-out-of-two configuration, with these outputs combined so that two-out-of-three sets tripped initiates containment spray. This configuration is called Containment Pressure - High 3 Setpoint. Since containment pressure is not used for control, both of these arrangements exceed the minimum redundancy requirements.~~ Additional redundancy is warranted because this Function is energized to trip. Containment Pressure - ~~[High 3]~~ [High High] must be OPERABLE in MODES 1, 2, and 3 when there is sufficient energy in the primary and secondary sides to pressurize the containment following a pipe break. In MODES 4, 5, and 6, there is insufficient energy in the primary and secondary sides to pressurize the containment and reach the Containment Pressure - ~~High 3~~ (High High) setpoints.

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3. Containment Isolation

Containment Isolation provides isolation of the containment atmosphere, and all process systems that penetrate containment, from the environment. This Function is necessary to prevent or limit the release of radioactivity to the environment in the event of a large break LOCA.

There are two separate Containment Isolation signals, Phase A and Phase B. Phase A isolation isolates all automatically isolable process lines, except component cooling water (CCW)~~,~~ at a relatively low containment pressure indicative of primary or secondary system leaks. For these types of events, forced circulation cooling using the reactor coolant pumps (RCPs) and SGs is the preferred (but not required) method of decay heat removal. Since CCW is required to support RCP operation, not isolating CCW on the low pressure Phase A signal enhances unit safety by allowing operators to use forced RCS circulation to cool the unit. Isolating CCW on the low pressure signal may force the use of feed and bleed cooling, which could prove more difficult to control.

Phase A containment isolation is actuated automatically by SI, or manually via the automatic actuation ~~logic~~. ~~All process lines penetrating containment, with the exception of CCW, are isolated.~~ CCW is not isolated at this time to permit continued operation of the RCPs with cooling water flow to the thermal barrier heat exchangers and ~~air or oil coolers~~. All process lines not equipped with ~~remote operated~~ isolation valves are manually closed, or otherwise isolated, prior to reaching MODE 4~~.~~

Manual Phase A Containment Isolation is accomplished by either of two switches in the control room. Either switch actuates both trains. ~~Note that manual actuation of Phase A Containment Isolation also actuates Containment Purge and Exhaust Isolation.~~

The Phase B signal isolates CCW~~.~~ This occurs at a relatively high containment pressure that is indicative of a large break LOCA or an SLB. For these events, forced circulation using the RCPs is no longer desirable. Isolating ~~the CCW~~ at the higher pressure does not pose a challenge to the containment boundary because the ~~CCW System is a~~ closed loop inside containment. ~~Although some system components do not meet all of the ASME Code requirements applied to the containment itself, the system is~~ continuously

3

and cooling water to the containment air recirculation fan cooling coils, and the Unit 1 containment instrument air

The cooling water to the containment air recirculation fan cooling coils is not isolated by a Phase A signal to allow continued containment cooling. The Unit 1 containment instrument air is not isolated by a Phase A signal to allow instrument air to be available to support valve operation inside containment (e.g., CCW valves).

relays

required to be isolated under accident conditions and

motors

automatic

(except when open under administrative controls).

and cooling water to the containment air recirculation fan cooling coils and containment instrument air (for Unit 1 only)

these additional systems

systems are

s

systems are

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3

pressurized to a pressure greater than the Phase B setpoint. Thus, routine operation demonstrates the integrity of the system pressure boundary for pressures exceeding the Phase B setpoint. Furthermore, because system pressure exceeds the Phase B setpoint, any system leakage prior to initiation of Phase B isolation would be into containment. Therefore, the combination of ~~CCW~~ System design and Phase B isolation ensures the ~~CCW System is~~ systems are not a potential path for radioactive release from containment.

Phase B containment isolation is actuated by ~~Containment Pressure - High 3 or~~ Containment Pressure - High High, or manually, via the automatic actuation ~~logic~~ relays, as previously discussed. For containment pressure to reach a value high enough to actuate ~~Containment Pressure - High 3 or~~ Containment Pressure - High High, a ~~large break~~ LOCA or SLB must have occurred and containment spray must have been actuated. RCP operation will no longer be required and CCW to the RCPs is, therefore, no longer necessary. ~~The RCPs can be operated with seal injection flow alone and without CCW flow to the thermal barrier heat exchanger.~~

Manual Phase B Containment ~~Isolation~~ is accomplished by the same switches that actuate Containment Spray. When the two switches in either set are ~~turned~~ actuated simultaneously, Phase B Containment Isolation and Containment Spray will be actuated in both trains in Unit 2 and one train in Unit 1.

a. Containment Isolation - Phase A Isolation

(1) Phase A Isolation - Manual Initiation

Manual Phase A Containment Isolation is actuated by either of two switches in the control room. Either switch actuates both trains. ~~Note that manual initiation of Phase A Containment Isolation also actuates Containment Purge Isolation.~~

(2) Phase A Isolation - Automatic Actuation Logic and Actuation Relays

Function 1.b text

This LCO requires two trains to be OPERABLE. Actuation logic consists of all circuitry housed within the actuation subsystems, including the initiating relay contacts responsible for actuating the ESF equipment.

~~Automatic Actuation Logic and Actuation Relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.~~

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

Manual and automatic initiation of Phase A Containment Isolation must be OPERABLE in MODES 1, 2, and 3, when there is a potential for an accident to occur. Manual initiation is also required in MODE 4 even though automatic actuation is not required. In this MODE, adequate time is available to manually actuate required components in the event of a DBA, but because of the large number of components actuated on a Phase A Containment Isolation, actuation is simplified by the use of the manual actuation ~~push buttons~~. Automatic actuation logic and actuation relays must be OPERABLE in MODE 4 to support system level manual initiation. In MODES 5 and 6, there is insufficient energy in the primary or secondary systems to pressurize the containment to require Phase A Containment Isolation. There also is adequate time for the operator to evaluate unit conditions and manually actuate individual isolation valves in response to abnormal or accident conditions.

switches

3

, however only the actuation relays are required

(3) Phase A Isolation - Safety Injection

Phase A Containment Isolation is also initiated by all Functions that initiate SI. The Phase A Containment Isolation requirements for these Functions are the same as the requirements for their SI function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead, Function 1, SI, is referenced for all initiating Functions and requirements.

3

b. Containment Isolation - Phase B Isolation

.c

Phase B Containment Isolation is accomplished by Manual Initiation, Automatic Actuation Logic and Actuation Relays, and by Containment Pressure channels (the same channels that actuate Containment Spray, Function 2). The Containment Pressure ~~trip~~ of Phase B Containment Isolation is energized to ~~trip~~ in order to minimize the potential of spurious ~~trips~~ that may damage the RCPs.

The manual Phase B Containment Isolation is accomplished by the manual Containment Spray switches described in Function 2.a.

actuation

actuate

actuations

(1) Phase B Isolation - Manual Initiation

(2) Phase B Isolation - Automatic Actuation Logic and Actuation Relays

This LCO requires two trains to be OPERABLE. Actuation logic consists of all circuitry housed within the actuation subsystems, including the initiating relay contacts responsible for actuating the ESF equipment.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

*Manual and automatic initiation* of Phase B *containment* isolation must be OPERABLE in MODES 1, 2, and 3, when there is a potential for an accident to occur. Manual initiation is also required in MODE 4 even though automatic actuation is not required. In this MODE, adequate time is available to manually actuate required components in the event of a DBA. However, because of the large number of components actuated on a Phase B containment isolation, actuation is simplified by the use of the manual actuation ~~push buttons~~ switches. Automatic actuation logic and actuation relays must be OPERABLE in MODE 4 , however only the actuation relays are required to support system level manual initiation. In MODES 5 and 6, there is insufficient energy in the primary or secondary systems to pressurize the containment to require Phase B containment isolation. There also is adequate time for the operator to evaluate unit conditions and manually actuate individual isolation valves in response to abnormal or accident conditions.

3

(3) Phase B Isolation - Containment Pressure - High High

3

The basis for containment pressure MODE applicability is as discussed for ESFAS Function 2.c above.

4. Steam Line Isolation

Isolation of the main steam lines provides protection in the event of an SLB inside or outside containment. Rapid isolation of the steam lines will limit the steam break accident to the blowdown from one SG, at most. For an SLB upstream of the main steam isolation valves (MSIVs), inside or outside of containment, closure of the MSIVs limits the accident to the blowdown from only the affected SG. For an SLB downstream of the MSIVs, closure of the MSIVs terminates the accident as soon as the steam lines depressurize. For ~~units that do~~ Unit 2 which does not have steam line check valves, Steam Line Isolation also mitigates the effects of a feed line break and ensures a source of steam for the turbine driven AFW pump during a feed line break.

3

a. Steam Line Isolation - Manual Initiation [Unit 2 only]

Manual initiation of Steam Line Isolation can be accomplished from the control room. There are two switches per train in the control

The Unit 1 design does not include a system level manual steam line isolation capability. Unit 1 manual isolation of the MSIVs can be accomplished via the individual manual control switches for each MSIV. The capability to manually actuate each MSIV is an OPERABILITY requirement of Technical Specification 3.7.2, "MSIVs."



BASES

simultaneous actuation of both switches in a train

a system level

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

per train

3

room and ~~either switch~~ can initiate action to immediately close all MSIVs. The LCO requires two channels to be OPERABLE.

Function 1.b text

b. Steam Line Isolation - Automatic Actuation Logic and Actuation Relays

This LCO requires two trains to be OPERABLE. Actuation logic consists of all circuitry housed within the actuation subsystems, including the initiating relay contacts responsible for actuating the ESF equipment.

~~Automatic actuation logic and actuation relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.~~

Manual and automatic initiation of steam line isolation must be OPERABLE in MODES 1, 2, and 3 when there is sufficient energy in the RCS and SGs to have an SLB or other accident. This could result in the release of significant quantities of energy and cause a cooldown of the primary system. The Steam Line Isolation Function is required in MODES 2 and 3 unless all MSIVs are closed and [de-activated]. In MODES 4, 5, and 6, there is insufficient energy in the RCS and SGs to experience an SLB or other accident releasing significant quantities of energy.

3

s

two

c. Steam Line Isolation - Containment Pressure - ~~High 2~~

This Function actuates ~~closure of~~ the MSIVs in the event of a LOCA or an SLB ~~inside~~ containment to maintain at least ~~one~~ unfaulted ~~SG~~ as a heat sink for the reactor, and to limit the mass and energy release to containment. ~~The transmitters (d/p cells) are located outside containment with the sensing line (high pressure side of the transmitter) located inside containment.~~ Containment Pressure - ~~High 2~~ provides no input to any control ~~functions.~~ Thus, three OPERABLE channels are sufficient to satisfy protective requirements with two-out-of-three logic. ~~However, for enhanced reliability, this Function was designed with four channels and a two-out-of-four logic.~~ ~~The transmitters and electronics are located outside of containment. Thus, they~~ will not experience any adverse environmental conditions, and the Trip Setpoint reflects only steady state instrument uncertainties.

Intermediate High High

4

Containment Pressure - ~~High 2~~ must be OPERABLE in MODES 1, 2, and 3, when there is sufficient energy in the primary and secondary side to pressurize the containment following a pipe break. This would cause a significant increase in the containment pressure, thus allowing detection and

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3

must be

closure of the MSIVs. The Steam Line Isolation Function ~~remains~~ OPERABLE in MODES 2 and 3 unless all MSIVs are closed and ~~{~~de-activated]. In MODES 4, 5, and 6, there is not enough energy in the primary and secondary sides to pressurize the containment to the Containment Pressure - ~~High 2~~ setpoint.

Intermediate High High

d. Steam Line Isolation - Steam Line Pressure

(1) Steam Line Pressure - Low

s

two

Steam Line Pressure ~~- Low~~ provides closure of the MSIVs in the event of an SLB to maintain ~~at least one~~ unfaulted SG as a heat sink for the reactor, and to limit the mass and energy release to containment. This Function provides closure of the MSIVs in the event of a feed line break to ensure a supply of steam for the turbine driven AFW pump. Steam Line Pressure - Low was discussed previously under SI Function 1.e~~.1~~.

The

Steam Line Pressure - Low Function must be OPERABLE in MODES 1, 2, and 3 (above P-11), with any main steam valve open, when a secondary side break or stuck open valve could result in the rapid depressurization of the steam lines. This signal may be manually blocked by the operator below the P-11 setpoint. Below P-11, an inside containment SLB will be terminated by automatic actuation via Containment Pressure - ~~High 2~~. Stuck valve transients and outside containment SLBs will be terminated by the Steam Line Pressure - Negative Rate - High signal for Steam Line Isolation below P-11 when SI has been manually blocked. The Steam Line Isolation Function is required in MODES 2 and 3 unless all MSIVs are closed and {de-activated}. This Function is not required to be OPERABLE in MODES 4, 5, and 6 because there is insufficient energy in the secondary side of the unit to have an accident.

Intermediate-High-High

(2) Steam Line Pressure - Negative Rate - High

Steam Line Pressure - Negative Rate - High provides closure of the MSIVs for an SLB when less than the P-11 setpoint, to maintain ~~at least one~~ unfaulted SG as a heat

two

s

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

sink for the reactor, and to limit the mass and energy release to containment. When the operator manually blocks the Steam Line Pressure - Low main steam isolation signal when less than the P-11 setpoint, the Steam Line Pressure - Negative Rate - High signal is automatically enabled. Steam Line Pressure - Negative Rate - High provides no input to any control functions. Thus, three OPERABLE channels are sufficient to satisfy requirements with a two-out-of-three logic on each steam line.

Steam Line Pressure - Negative Rate - High must be OPERABLE in MODE 3 when less than the P-11 setpoint, when a secondary side break or stuck open valve could result in the rapid depressurization of the steam line(s). In MODES 1 and 2, and in MODE 3, when above the P-11 setpoint, this signal is automatically disabled and the Steam Line Pressure - Low signal is automatically enabled. The Steam Line Isolation Function is required to be OPERABLE in MODES 2 and 3 unless all MSIVs are closed and [de-activated]. In MODES 4, 5, and 6, there is insufficient energy in the primary and secondary sides to have an SLB or other accident that would result in a release of significant ~~enough~~ quantities of energy to cause a cooldown of the RCS.

While the transmitters may experience elevated ambient temperatures due to an SLB, the ~~trip~~ Function is based on rate of change, not the absolute accuracy of the indicated steam pressure. Therefore, the Trip Setpoint reflects only steady state instrument uncertainties.

3

N/A to BVPS

~~e.~~ f. Steam Line Isolation - High Steam Flow in Two Steam Lines Coincident with $T_{avg}$ - Low Low or Coincident With Steam Line Pressure - Low (Three and Four Loop Units)

These Functions (4.~~e and~~ 4.f) provide closure of the MSIVs during an SLB or inadvertent opening of an SG relief or a safety valve, to maintain at least one unfaulted SG as a heat sink for the reactor and to limit the mass and energy release to containment.

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3

N/A to BVPS

These Functions were discussed previously as Functions 1.f. and 1.g.

These Functions must be OPERABLE in MODES 1 and 2, and in MODE 3, when a secondary side break or stuck open valve could result in the rapid depressurization of the steam lines unless all MSIVs are closed and [de-activated]. These Functions are not required to be OPERABLE in MODES 4, 5, and 6 because there is insufficient energy in the secondary side of the unit to have an accident.

g. Steam Line Isolation - High Steam Flow Coincident With Safety Injection and Coincident With $T_{avg}$ - Low Low (Two Loop Units)

This Function provides closure of the MSIVs during an SLB or inadvertent opening of an SG relief or safety valve to maintain at least one unfaulted SG as a heat sink for the reactor, and to limit the mass and energy release to containment.

Two steam line flow channels per steam line are required OPERABLE for this Function. These are combined in a one-out-of-two logic to indicate high steam flow in one steam line. The steam flow transmitters provide control inputs, but the control function cannot cause the events that the function must protect against. Therefore, two channels are sufficient to satisfy redundancy requirements. The one-out-of-two configuration allows online testing because trip of one high steam flow channel is not sufficient to cause initiation.

The High Steam Flow Allowable Value is a ΔP corresponding to 25% of full steam flow at no load steam pressure. The Trip Setpoint is similarly calculated.

With the transmitters (d/p cells) typically located inside the steam tunnels, it is possible for them to experience adverse environmental conditions during an SLB event. Therefore, the Trip Setpoints reflect both steady state and adverse environmental instrument uncertainties.

The main steam line isolates only if the high steam flow signal occurs coincident with an SI and low low RCS average temperature. The Main Steam Line Isolation Function requirements for the SI Functions are the same as the

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3

N/A to BVPS

~~requirements for their SI function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead, Function 1, SI, is referenced for all initiating functions and requirements.~~

~~Two channels of $T_{avg}$ per loop are required to be OPERABLE. The $T_{avg}$ channels are combined in a logic such that two channels tripped cause a trip for the parameter. The accidents that this Function protects against cause reduction of $T_{avg}$ in the entire primary system. Therefore, the provision of two OPERABLE channels per loop in a two-out-of-four configuration ensures no single random failure disables the $T_{avg}$ - Low Low Function. The $T_{avg}$ channels provide control inputs, but the control function cannot initiate events that the Function acts to mitigate. Therefore, additional channels are not required to address control protection interaction issues.~~

~~With the $T_{avg}$ resistance temperature detectors (RTDs) located inside the containment, it is possible for them to experience adverse environmental conditions during an SLB event. Therefore, the Trip Setpoint reflects both steady state and adverse environmental instrumental uncertainties.~~

~~This Function must be OPERABLE in MODES 1 and 2, and in MODE 3, when above the P-12 setpoint, when a secondary side break or stuck open valve could result in rapid depressurization of the steam lines. Below P-12 this Function is not required to be OPERABLE because the High High Steam Flow coincident with SI Function provides the required protection. The Steam Line Isolation Function is required to be OPERABLE in MODES 2 and 3 unless all MSIVs are closed and [de-activated]. This Function is not required to be OPERABLE in MODES 4, 5, and 6 because there is insufficient energy in the secondary side of the unit to have an accident.~~

h. ~~<u>Steam Line Isolation - High High Steam Flow Coincident With Safety Injection (Two Loop Units)</u>~~

~~This Function provides closure of the MSIVs during a steam line break (or inadvertent opening of a relief or safety valve) to maintain at least one unfaulted SG as a heat sink for the reactor, and to limit the mass and energy release to containment.~~

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3

N/A to BVPS

Two steam line flow channels per steam line are required to be OPERABLE for this Function. These are combined in a one-out-of-two logic to indicate high steam flow in one steam line. The steam flow transmitters provide control inputs, but the control function cannot cause the events that the Function must protect against. Therefore, two channels are sufficient to satisfy redundancy requirements.

The Allowable Value for high steam flow is a ΔP, corresponding to 130% of full steam flow at full steam pressure. The Trip Setpoint is similarly calculated.

With the transmitters typically located inside the steam tunnels, it is possible for them to experience adverse environmental conditions during an SLB event. Therefore, the Trip Setpoint reflects both steady state and adverse environmental instrument uncertainties.

The main steam lines isolate only if the high steam flow signal occurs coincident with an SI signal. The Main Steam Line Isolation Function requirements for the SI Functions are the same as the requirements for their SI function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead, Function 1, SI, is referenced for all initiating functions and requirements.

This Function must be OPERABLE in MODES 1, 2, and 3 when a secondary side break or stuck open valve could result in rapid depressurization of the steam lines unless all MSIVs are closed and [de-activated]. This Function is not required to be OPERABLE in MODES 4, 5, and 6 because there is insufficient energy in the secondary side of the unit to have an accident.

5. Turbine Trip and Feedwater Isolation

The primary functions of the Turbine Trip and Feedwater Isolation signals are to prevent damage to the turbine due to water in the steam lines, and to stop the excessive flow of feedwater into the SGs. These Functions are necessary to mitigate the effects of a high water level in the SGs, which could result in carryover of water into the steam lines and excessive cooldown of the primary system. The SG high water level is due to excessive feedwater flows.

BASES

by an SI signal or

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3

The Function is actuated when the level in any SG exceeds the high high setpoint, and performs the following functions:

and

.

- Trips the main turbine,
- Trips the MFW pumps,
- Initiates feedwater isolation, ~~and~~
- Shuts the ~~MFW regulating~~ valves ~~and the bypass~~ feedwater ~~regulating valves.~~

11

This ~~Function~~ is actuated by SG Water Level - High High, ~~or by an SI~~ signal. The ~~RTS also~~ initiates a turbine trip ~~signal whenever~~ a reactor trip (P-4) is generated. ~~In the event~~ of SI, the unit is taken off line and the turbine generator ~~must be tripped~~. The MFW System is also taken ~~out of operation~~ and the AFW System ~~is automatically~~ ~~started.~~ The SI signal was discussed previously.

Function 1.b text

3

This LCO requires two trains to be OPERABLE. Actuation logic consists of all circuitry housed within the actuation subsystems, including the initiating relay contacts responsible for actuating the ESF equipment.

a. <u>Turbine Trip and Feedwater Isolation - Automatic Actuation Logic and Actuation Relays</u>

Automatic ~~Actuation~~ Logic and Actuation Relays ~~consist of the~~ same features and ~~operate in the same~~ manner as described for ~~ESFAS Function 1.b.~~

b. <u>Turbine Trip and Feedwater Isolation - Steam Generator Water Level - High High (P-14)</u>

From CTS

The Allowable Value for this Function is specified in percent of narrow range instrument span.

Three

This signal provides protection against excessive feedwater flow. The ESFAS SG water level instruments provide input to the SG Water Level Control System. Therefore, the actuation logic must be able to withstand both an input failure to the control system (which may then require the protection function actuation) and a single failure in the other channels providing the protection function actuation. ~~Thus, four~~ OPERABLE channels ~~are required to~~ satisfy the requirements with a two-out-of-~~four~~ logic. ~~For units that have dedicated protection and control~~ ~~channels, only three protection channels are necessary to~~ ~~satisfy the protective requirements. For other units that have~~ ~~only three channels, a median signal selector is provided or~~ ~~justification is provided in NUREG-1218 (Ref. 7).~~

three

Three channels are acceptable in this application because functional separation between the protection and control systems is accomplished by the use of a median signal selector switch.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

4

~~The transmitters [d/p cells) are located inside containment. However, the events that this Function protects against cannot cause~~ a severe environment ~~in containment.~~ Therefore, the trip setpoint reflects only steady state instrument uncertainties.

do not experience

and

c. Turbine Trip and Feedwater Isolation - Safety Injection

Turbine Trip and Feedwater Isolation is also initiated by all Functions that initiate SI. The Feedwater Isolation Function requirements for these Functions are the same as the requirements for their SI function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead, Function 1, SI, is referenced for all initiating functions and requirements.

Turbine Trip and Feedwater Isolation Functions must be OPERABLE in MODES 1 ~~and~~ 2 [and 3] ~~except when all MFIVs, MFRVs, [and associated bypass valves] are closed and [de-activated] [or isolated by a closed manual valve] when the MFW System is in operation and the turbine generator may be in operation.~~ In MODES ~~[3,]~~ 4, 5, and 6, the MFW System and the turbine generator are not in service and this Function is not required to be OPERABLE.

3

except when all Main Feedwater Lines are isolated by either closed and deactivated MFIVs, or MFRVs and associated bypass valves, or closed manual valves. In these Modes the MFW system and turbine generator may be in service.

6. Auxiliary Feedwater

The AFW System is designed to provide a secondary side heat sink for the reactor in the event that the MFW System is not available. The system has two motor driven pumps and a turbine driven pump, making it available during normal unit operation, during a loss of AC power, a loss of MFW, and during a Feedwater System pipe break. The normal source of water for the AFW System is the condensate storage tank (CST) ~~(normally not safety related). A low level in the CST will automatically realign the pump suctions to the Essential Service Water (ESW) System (safety related).~~ The AFW System is aligned so that upon a pump start, flow is initiated to the ~~respective~~ SGs immediately.

• The River Water (Unit 1) and Service Water (Unit 2) Systems provides a backup source of water for the AFW system.

3

a. Auxiliary Feedwater - Automatic Actuation Logic and Actuation Relays ~~(Solid State Protection System)~~

~~Automatic actuation logic and actuation relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.~~

Function 1.b text

This LCO requires two trains to be OPERABLE. Actuation logic consists of all circuitry housed within the actuation subsystems, including the initiating relay contacts responsible for actuating the ESF equipment.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

From CTS

The Allowable Value for this Function is specified in percent of narrow range instrument span.

b. ~~Auxiliary Feedwater - Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS)~~

~~Automatic actuation logic and actuation relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.~~

b

~~c.~~ Auxiliary Feedwater - Steam Generator Water Level - Low Low

The actuation of two-out-of-three channels of SG Low-Low Level on any one SG will start the Turbine-Driven AFW Pump. The actuation of two-out-of-three channels of SG Low- Low Level on any two SGs will start the Motor-Driven AFW pumps.

CTS Description

SG Water Level - Low Low provides protection against a loss of heat sink. A feed line break, inside or outside of containment, or a loss of MFW, would result in a loss of SG water level. ~~SG Water Level - Low Low provides input to the SG Level Control System. Therefore, the actuation logic must be able to withstand both an input failure to the control system which may then require a protection function actuation and a single failure in the other channels providing the protection function actuation.~~ ~~Thus, four~~ Three OPERABLE channels are required to satisfy the requirements with two-out-of-~~four~~ three logic. ~~For units that have dedicated protection and control channels, only three protection channels are necessary to satisfy the protective requirements. For other units that have only three channels, a median signal selector is provided or justification is provided in Reference 7.~~

3

Three channels are acceptable in this application because functional separation between the protection and control systems is accomplished by the use of a median signal selector switch.

With the transmitters ~~(d/p cells) located inside containment and thus~~ possibly experiencing adverse environmental conditions (feed line break), the Trip Setpoint reflects the inclusion of both steady state and adverse environmental instrument uncertainties.

c

~~d.~~ Auxiliary Feedwater - Safety Injection

An SI signal starts the motor driven and turbine driven AFW pumps. The AFW initiation functions are the same as the requirements for their SI function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead, Function 1, SI, is referenced for all initiating functions and requirements.

~~e. Auxiliary Feedwater - Loss of Offsite Power~~

~~A loss of offsite power to the service buses will be accompanied by a loss of reactor coolant pumping power and the subsequent~~

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3

need for some method of decay heat removal. The loss of offsite power is detected by a voltage drop on each service bus. Loss of power to either service bus will start the turbine driven AFW pumps to ensure that at least one SG contains enough water to serve as the heat sink for reactor decay heat and sensible heat removal following the reactor trip.

c

Functions 6.a through ~~6.e~~ must be OPERABLE in MODES 1, 2, and 3 to ensure that the SGs remain the heat sink for the reactor. SG Water Level - Low Low in any operating SG will cause the motor driven AFW pumps to start. The system is aligned so that upon a start of the pump, water immediately begins to flow to the SGs. SG Water Level - Low Low in any two operating SGs will cause the ~~turbine driven pumps to start.~~ These Functions do not have to be OPERABLE in MODES 5 and 6 because there is not enough heat being generated in the reactor to require the SGs as a heat sink. In MODE 4, AFW actuation does not need to be OPERABLE because either AFW or residual heat removal (RHR) will already be in operation to remove decay heat or sufficient time is available to manually place either system in operation.

AFW pump start is described on previous page.

d. ~~f.~~ Auxiliary Feedwater - Undervoltage Reactor Coolant Pump

A loss of power on the buses that provide power to the RCPs provides indication of a pending loss of RCP forced flow in the RCS. ~~The Undervoltage RCP Function senses the voltage downstream of each RCP breaker.~~ A loss of power~~, or an open RCP breaker,~~ on two or more RCPs, will start the turbine driven AFW pump to ensure that at least one SG contains enough water to serve as the heat sink for reactor decay heat and sensible heat removal following the reactor trip.

s

two

e. ~~g.~~ Auxiliary Feedwater - Trip of All Main Feedwater Pumps

A Trip of all MFW pumps is an indication of a loss of MFW and the subsequent need for some method of decay heat and sensible heat removal to bring the reactor back to no load temperature and pressure. ~~A turbine driven MFW pump is equipped with two pressure switches on the control air/oil line for the speed control system. A low pressure signal from either of these pressure switches indicates a trip of that pump. Motor driven~~ The MFW pumps are equipped with a breaker position sensing device. An open supply breaker indicates that the

(two-out-of-two MFW pump breakers open with either pump control switch in the after-start position)

running

two

s are

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3

*pump is not running.* ~~Two OPERABLE channels per pump satisfy redundancy requirements with one-out-of-two taken twice logic.~~ A trip of all MFW pumps starts the motor driven ~~and turbine driven~~ AFW pumps to ensure that ~~at least one~~ SG ~~is~~ available with water to act as the heat sink for the reactor.

6.d and 6.e

two SGs are

Functions ~~6.f and 6.g~~ must be OPERABLE in MODES 1 and 2. This ensures that ~~at least one SG is~~ provided with water to serve as the heat sink to remove reactor decay heat and sensible heat in the event of an accident. In MODES 3, 4, and 5, the RCPs and MFW pumps may be normally shut down, and thus neither pump trip is indicative of a condition requiring automatic AFW initiation.

h. Auxiliary Feedwater - Pump Suction Transfer on Suction Pressure - Low

A low pressure signal in the AFW pump suction line protects the AFW pumps against a loss of the normal supply of water for the pumps, the CST. Two pressure switches are located on the AFW pump suction line from the CST. A low pressure signal sensed by any one of the switches will cause the emergency supply of water for both pumps to be aligned, or cause the AFW pumps to stop until the emergency source of water is aligned. ESW (safety grade) is then lined up to supply the AFW pumps to ensure an adequate supply of water for the AFW System to maintain at least one of the SGs as the heat sink for reactor decay heat and sensible heat removal.

N/A to BVPS

Since the detectors are located in an area not affected by HELBs or high radiation, they will not experience any adverse environmental conditions and the Trip Setpoint reflects only steady state instrument uncertainties.

This Function must be OPERABLE in MODES 1, 2, and 3 to ensure a safety grade supply of water for the AFW System to maintain the SGs as the heat sink for the reactor. This Function does not have to be OPERABLE in MODES 5 and 6 because there is not enough heat being generated in the reactor to require the SGs as a heat sink. In MODE 4, AFW automatic suction transfer does not need to be OPERABLE because RHR will already be in operation, or sufficient time is available to place RHR in operation, to remove decay heat.

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3

In Unit 1, the low head SI (LHSI) pumps and containment recirculation spray (RS) pumps draw water from the containment sump. The RS pumps pump the water through the RS heat exchanger to the recirculation spray headers. The LHSI pumps circulate the water back to the reactor and provide suction to the High Head SI (HHSI) pumps. In Unit 2, during the recirculation phase, one RS pump per train provides the low head injection function and suction to the HHSI pump and one RS pump per train provides the recirculation spray function. Both the Unit 2 RS pumps on each train draw water from the containment sump and pump water through an RS heat exchanger.

~~7.~~ Automatic Switchover to Containment Sump

At the end of the injection phase of a LOCA, the RWST will be nearly empty. Continued cooling must be provided by the ECCS to remove decay heat. The source of water for the ECCS pumps is automatically switched to the containment recirculation sump. ~~The low head residual heat removal (RHR) pumps and containment spray pumps draw the water from the containment recirculation sump, the RHR pumps pump the water through the RHR heat exchanger, inject the water back into the RCS, and supply the cooled water to the other ECCS pumps.~~ Switchover from the RWST to the containment sump must occur before the RWST empties to prevent damage to the ~~RHR~~ pumps and a loss of core cooling capability. For similar reasons, switchover must not occur before there is sufficient water in the containment sump to support ESF pump suction. Furthermore, early switchover must not occur to ensure that sufficient borated water is injected from the RWST. This ensures the reactor remains shut down in the recirculation mode.

a. Automatic Switchover to Containment Sump - Automatic Actuation Logic and Actuation Relays

~~Automatic actuation logic and actuation relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.~~

Function 1.b text

This LCO requires two trains to be OPERABLE. Actuation logic consists of all circuitry housed within the actuation subsystems, including the initiating relay contacts responsible for actuating the ESF equipment.

(Unit 1) and extreme low (Unit 2)

b, c. Automatic Switchover to Containment Sump - Refueling Water Storage Tank (RWST) Level - Low ~~Low~~ Coincident With Safety Injection ~~and Coincident With Containment Sump Level - High~~

During the injection phase of a LOCA, the RWST is the source of water for all ECCS pumps. A low ~~low~~ level in the RWST coincident with an SI signal provides protection against a loss of water for the ECCS pumps ~~and indicates the end of the injection phase of the LOCA~~. The RWST is equipped with four level transmitters. These transmitters provide no control functions. Therefore, a two-out-of-four logic is adequate to initiate the protection function actuation. Although only three channels would be sufficient, a fourth channel has been added for increased reliability due to the energize to trip design of these channels.

(Unit 1) and extreme low (Unit 2).

The RWST ~~- Low Low~~ Allowable Value~~/Trip Setpoint~~ has both upper and lower limits. The lower limit is selected to ensure

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

upper

switchover occurs before the RWST empties, to prevent ECCS pump damage. The upper limit is selected to ensure enough borated water is injected to ensure the reactor remains shut down. The ~~high~~ limit also ensures adequate water inventory in the containment sump to provide ECCS pump suction.

4

The transmitters ~~are located in an area not affected by HELBs or post accident high radiation. Thus, they~~ will not experience any adverse environmental conditions and the trip setpoint reflects only steady state instrument uncertainties. therefore,

(Unit 1) and extreme low (Unit 2)

Automatic switchover occurs only if the RWST low ~~low~~ level signal is coincident with SI. This prevents accidental switchover during normal operation. Accidental switchover could damage ECCS pumps if they are attempting to take suction from an empty sump. The automatic switchover Function requirements for the SI Functions are the same as the requirements for their SI function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead, Function 1, SI, is referenced for all initiating Functions and requirements.

3

- REVIEWER'S NOTE -

In some units, additional protection from spurious switchover is provided by requiring a Containment Sump Level - High signal as well as RWST Level - Low Low and SI. This ensures sufficient water is available in containment to support the recirculation phase of the accident. A Containment Sump Level - High signal must be present, in addition to the SI signal and the RWST Level - Low Low signal, to transfer the suctions of the RHR pumps to the containment sump. The containment sump is equipped with four level transmitters. These transmitters provide no control functions. Therefore, a two-out-of-four logic is adequate to initiate the protection function actuation. Although only three channels would be sufficient, a fourth channel has been added for increased reliability. The containment sump level Trip Setpoint/Allowable Value is selected to ensure enough borated water is injected to ensure the reactor remains shut down. The high limit also ensures adequate water inventory in the containment sump to provide ECCS pump suction. The transmitters are located inside containment and thus possibly experience adverse environmental conditions. Therefore, the trip setpoint reflects the inclusion of both steady state and environmental instrument uncertainties.

Units only have one of the Functions, 7.b or 7.c.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

These Functions must be OPERABLE in MODES 1, 2, 3, and 4 when there is a potential for a LOCA to occur, to ensure a continued supply of water for the ECCS pumps. These Functions are not required to be OPERABLE in MODES 5 and 6 because there is adequate time for the operator to evaluate unit conditions and respond by manually starting systems, pumps, and other equipment to mitigate the consequences of an abnormal condition or accident. System pressure and temperature are very low and many ESF components are administratively locked out or otherwise prevented from actuating to prevent inadvertent overpressurization of unit systems.

8. Engineered Safety Feature Actuation System Interlocks

To allow some flexibility in unit operations, several interlocks are included as part of the ESFAS. These interlocks permit the operator to block some signals, automatically enable other signals, prevent some actions from occurring, and cause other actions to occur. The interlock Functions back up manual actions to ensure bypassable functions are in operation under the conditions assumed in the safety analyses.

Although SI actuation may be manually reset after a 75 second delay, if P-4 is enabled, subsequent automatic SI initiation is blocked until P-4 is reset (RTBs closed).

without further automatic SI actuations taking place.

3

a. Engineered Safety Feature Actuation System Interlocks - Reactor Trip, P-4

The P-4 interlock is enabled when a reactor trip breaker (RTB) and its associated bypass breaker is open. ~~Once the P-4 interlock is enabled, automatic SI initiation is blocked after a [ ] second time delay.~~ This Function allows operators to take manual control of SI systems after the initial phase of injection is complete. ~~Once SI is blocked, automatic actuation of SI cannot occur until the RTBs have been manually closed.~~ The functions of the P-4 interlock are:

Regulating Valves

- Trip the main turbine,
- Isolate MFW with coincident low $T_{avg}$,

automatic

- Prevent reactuation of SI after a manual reset of SI,
- ~~Transfer the steam dump from the load rejection controller to the unit trip controller,~~ and

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

with low $T_{avg}$.

3

- Prevent opening of the MFW isolation valves if they were closed on SI or SG Water Level - High High.

Each of the above Functions is interlocked with P-4 to avert or reduce the continued cooldown of the RCS following a reactor trip. *An excessive cooldown of the RCS following a reactor trip* could cause an insertion of positive reactivity with a subsequent increase in generated power. To avoid such a situation, the noted Functions have been interlocked with P-4 as part of the design of the unit control and protection system.

and isolation of the MFW Regulating Valves coincident with low Tavg

or could result in an SI actuation.

None of the noted Functions serves a mitigation function in the unit licensing basis safety analyses. Only the turbine trip Function ~~is~~ explicitly assumed since ~~it is~~ an immediate consequence of the reactor trip Function. ~~Neither turbine trip, nor any of the other four Functions~~ associated with the reactor trip signal, is required to show that the unit licensing basis safety analysis acceptance criteria are not exceeded.

s are

they are

However, none of the P-4 Functions listed above

The RTB position switches that provide input to the P-4 interlock only function to energize or de-energize or open or close contacts. Therefore, this Function has no adjustable trip setpoint with which to associate a trip setpoint and Allowable Value.

This Function must be OPERABLE in MODES 1, 2, and 3 when the reactor may be critical or approaching criticality. This Function does not have to be OPERABLE in MODE 4, 5, or 6 because ~~the main turbine, the MFW System, and the Steam Dump System are not in operation.~~

there is insufficient energy in the secondary side of the unit to cause an excessive cooldown transient.

b. Engineered Safety Feature Actuation System Interlocks - Pressurizer Pressure, P-11

The P-11 interlock permits a normal unit cooldown and depressurization without actuation of SI or main steam line isolation. With two-out-of-three pressurizer pressure channels (discussed previously) less than the P-11 setpoint, the operator can manually block the Pressurizer Pressure - Low and Steam Line Pressure - Low SI signals and the Steam Line Pressure - Low steam line isolation signal (previously discussed). When the Steam Line Pressure - Low steam line isolation signal is manually blocked, a main steam isolation signal on Steam Line

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

Pressure - Negative Rate - High is enabled. This provides protection for an SLB by closure of the MSIVs. With two-out-of-three pressurizer pressure channels above the P-11 setpoint, the Pressurizer Pressure - Low and Steam Line Pressure - Low SI signals and the Steam Line Pressure - Low steam line isolation signal are automatically enabled. The operator ~~can~~ also enable these trips by use of the respective manual reset ~~buttons~~ switches. When the Steam Line Pressure - Low steam line isolation signal is enabled, the main steam isolation on Steam Line Pressure - Negative Rate - High is disabled. The Trip Setpoint reflects only steady state instrument uncertainties.

This Function must be OPERABLE in MODES 1, 2, and 3 to allow an orderly cooldown and depressurization of the unit without the actuation of SI or main steam isolation. This Function does not have to be OPERABLE in MODE 4, 5, or 6 because system pressure must already be below the P-11 setpoint for the requirements of the heatup and cooldown curves to be met.

c. Engineered Safety Feature Actuation System Interlocks - $T_{avg}$ - Low Low, P-12

3

On increasing reactor coolant temperature, the P-12 interlock ~~reinstates SI on High Steam Flow Coincident With Steam Line Pressure - Low or Coincident With~~ ~~$T_{avg}$ - Low Low and~~ provides an arming signal to the Steam Dump System. ~~On decreasing reactor coolant temperature, the P-12 interlock allows the operator to manually block SI on High Steam Flow Coincident With Steam Line Pressure - Low or Coincident with~~ ~~$T_{avg}$ - Low Low.~~ On a decreasing temperature, the P-12 interlock ~~also~~ removes the arming signal to the Steam Dump System to prevent an excessive cooldown of the RCS due to a malfunctioning Steam Dump System. Although the P-12 interlock Function provides protection that helps prevent an excessive cooldown event, it is not credited in any safety analysis as the primary actuation instrumentation necessary to mitigate a design basis accident.

Since $T_{avg}$ is used as an indication of bulk RCS temperature, this Function meets redundancy requirements with one OPERABLE channel in each loop. ~~In three loop units,~~ ~~t~~These channels are used in two-out-of-three logic. Although Tavg is used for control system input, three channels are acceptable in this application because functional separation between the protection and control systems is accomplished by the use of a median signal selector. ~~In four loop units, they are used in two-out-of-four logic.~~

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3

a malfunction of the Steam Dump System could result in an excessive cooldown of the RCS.

to cause an excessive RCS cooldown event.

This Function must be OPERABLE in MODES 1, 2, and 3 when ~~a secondary side break or stuck open valve could result in the rapid depressurization of the steam lines~~. This Function does not have to be OPERABLE in MODE 4, 5, or 6 because there is insufficient energy in the secondary side of the unit ~~to have an accident~~.

The ESFAS instrumentation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

ACTIONS

A Note has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed on Table 3.3.2-1.

In the event a channel's trip setpoint is found nonconservative with respect to the Allowable Value; or the transmitter, instrument Loop, signal processing electronics, or bistable is found inoperable, then all affected Functions provided by that channel must be declared inoperable and the LCO Condition(s) entered for the protection Function(s) affected. When the Required Channels in Table 3.3.2-1 are specified (e.g., on a per steam line, per loop, per SG, etc., basis), then the Condition may be entered separately for each steam line, loop, SG, etc., as appropriate.

When the number of inoperable channels in a trip function exceed those specified in one or other related Conditions associated with a trip function, then the unit is outside the safety analysis. Therefore, LCO 3.0.3 should be immediately entered if applicable in the current MODE of operation.

**- REVIEWER'S NOTE -**

Certain LCO Completion Times are based on approved topical reports. In order for a licensee to use these times, the licensee must justify the Completion Times as required by the staff Safety Evaluation Report (SER) for the topical report.

A.1

Condition A applies to all ESFAS protection functions.

Condition A addresses the situation where one or more channels or trains for one or more Functions are inoperable at the same time. The Required Action is to refer to Table 3.3.2-1 and to take the Required

ACTIONS (continued)

Actions for the protection functions affected. The Completion Times are those from the referenced Conditions and Required Actions.

B.1, B.2.1, and B.2.2

Condition B applies to manual initiation of:

- SI,
- Containment Spray,
- Phase A Isolation, and
- Phase B Isolation.

In addition, Condition B applies to the Automatic Actuation Logic for the Automatic Switchover to the Containment Sump Function.

3

This action addresses the train orientation of the SSPS for the functions listed above. If a channel or train is inoperable, 48 hours is allowed to return it to an OPERABLE status. Note that for containment spray and Phase B isolation, failure of one or both channels in one train renders the train inoperable. Condition B, therefore, encompasses both situations. The specified Completion Time is reasonable considering that there are two automatic actuation trains and another manual initiation train OPERABLE for each Function, and the low probability of an event occurring during this interval. If the train cannot be restored to OPERABLE status, the unit must be placed in a MODE in which the LCO does not apply. This is done by placing the unit in at least MODE 3 within an additional 6 hours (54 hours total time) and in MODE 5 within an additional 30 hours (84 hours total time). The allowable Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

manual

In the case of the Automatic Actuation Logic for the Containment sump switchover, the completion time is reasonable considering that the other automatic actuation logic train is operable and that manual actions may be taken to align the required equipment to the containment sump.

C.1, C.2.1, and C.2.2

Condition C applies to the automatic actuation logic and actuation relays for the following functions:

- SI,
- Containment Spray,
- Phase A Isolation,

and

This Action Condition is intended to address an inoperability of the actuation logic or relays associated with an ESFAS train that affects the integrated ESFAS response to an actuation signal. The relatively short Completion Time of this ACTION (6 hours) is based on the assumption that multiple ESF components within a train are affected by the failure of the actuation logic or relays. Therefore, the short Completion Time of this Action is appropriate and applicable whenever more than one ESF system is affected by the inoperable train of logic or relays.

**However, if one or more inoperable actuation relays in an ESFAS train only affect a single ESF component or system, the applicable Actions Condition for the affected ESF component or system should be entered and the relatively short Completion Time of this Action Condition is not appropriate or applicable.**

10

d)

- Phase B Isolation~~, and~~

3

- ~~Automatic Switchover to Containment Sump.~~

This action addresses the train orientation of the SSPS and the master and slave relays. If one train is inoperable, 6 hours are allowed to restore the train to OPERABLE status. The specified Completion Time is reasonable considering that there is another train OPERABLE, and the low probability of an event occurring during this interval. If the train cannot be restored to OPERABLE status, the unit must be placed in a MODE in which the LCO does not apply. This is done by placing the unit in at least MODE 3 within an additional 6 hours (12 hours total time) and in MODE 5 within an additional 30 hours (42 hours total time). The Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

The Required Actions are modified by a Note that allows one train to be bypassed for up to~~[~~ 4 ~~]~~hours for surveillance testing, provided the other train is OPERABLE. This allowance is based on the reliability analysis assumption of WCAP-10271-P-A (Ref. 8) that 4 hours is the average time required to perform channel surveillance.

5

D.1, D.2.1, and D.2.2

3

Condition D applies to:

- Containment Pressure - High ~~1~~,
- Pressurizer Pressure - Low ~~(two, three, and four loop units)~~,
- Steam Line Pressure - Low,
- ~~Steam Line Differential Pressure - High,~~
- ~~High Steam Flow in Two Steam Lines Coincident With $T_{avg}$ - Low Low or Coincident With Steam Line Pressure - Low,~~
- Containment Pressure - ~~High 2~~, Intermediate - High High
- Steam Line Pressure - Negative Rate - High,

ACTIONS (continued)

3

- ~~High Steam Flow Coincident With Safety Injection Coincident With $T_{avg}$ - Low Low,~~
- ~~High High Steam Flow Coincident With Safety Injection,~~
- ~~High Steam Flow in Two Steam Lines Coincident With $T_{avg}$ - Low Low,~~
- SG Water level - Low Low ~~(two, three, and four loop units)~~, and

[ • SG Water level - High High (P-14) ~~(two, three, and four loop units)~~. ]

If one channel is inoperable, 6 hours are allowed to restore the channel to OPERABLE status or to place it in the tripped condition. Generally this Condition applies to functions that operate on two-out-of-three logic. Therefore, failure of one channel places the Function in a two-out-of-two configuration. One channel must be tripped to place the Function in a one-out-of-~~three~~ two configuration that satisfies redundancy requirements.

Failure to restore the inoperable channel to OPERABLE status or place it in the tripped condition within 6 hours requires the unit be placed in MODE 3 within the following 6 hours and MODE 4 within the next 6 hours.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 4, these Functions are no longer required OPERABLE.

The Required Actions are modified by a Note that allows the inoperable channel to be bypassed for up to [ 4 ] hours for surveillance testing of other channels. The 6 hours allowed to restore the channel to OPERABLE status or to place the inoperable channel in the tripped condition, and the 4 hours allowed for testing, are justified in Reference 8. 5

3

E.1, E.2.1, and E.2.2

Condition E applies to:

- Containment Spray Containment Pressure - High ~~3 (High, High) (two, three, and four loop units)~~ High, and

BASES

ACTIONS (continued)

High

- Containment Phase B Isolation Containment Pressure - High ~~3 (High, High)~~.

3

None of these signals has input to a control function. Thus, two-out-of-three logic is necessary to meet acceptable protective requirements. However, a two-out-of-three design would require tripping a failed channel. This is undesirable because a single failure would then cause spurious containment spray initiation. Spurious spray actuation is undesirable because of the cleanup problems presented. Therefore, these channels are designed with two-out-of-four logic so that a failed channel may be bypassed rather than tripped. Note that one channel may be bypassed and still satisfy the single failure criterion. Furthermore, with one channel bypassed, a single instrumentation channel failure will not spuriously initiate containment spray.

To avoid the inadvertent actuation of containment spray and Phase B containment isolation, the inoperable channel should not be placed in the tripped condition. Instead it is bypassed. Restoring the channel to OPERABLE status, or placing the inoperable channel in the bypass condition within 6 hours, is sufficient to assure that the Function remains OPERABLE and minimizes the time that the Function may be in a partial trip condition (assuming the inoperable channel has failed high). The Completion Time is further justified based on the low probability of an event occurring during this interval. Failure to restore the inoperable channel to OPERABLE status, or place it in the bypassed condition within 6 hours, requires the unit be placed in MODE 3 within the following 6 hours and MODE 4 within the next 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 4, these Functions are no longer required OPERABLE.

The Required Actions are modified by a Note that allows one additional channel to be bypassed for up to [ 4 ] hours for surveillance testing. Placing a second channel in the bypass condition for up to 4 hours for testing purposes is acceptable based on the results of Reference ~~8~~.

5

<u>F.1, F.2.1, and F.2.2</u>

The Unit 2

Condition F applies to:

- Manual Initiation of Steam Line Isolation;

3

ACTIONS (continued)

3

- ~~Loss of Offsite Power,~~
- ~~Auxiliary Feedwater Pump Suction Transfer on Suction Pressure - Low,~~ and
- P-4 Interlock.

For the Manual Initiation and the P-4 Interlock Functions, this action addresses the train orientation of the SSPS. ~~For the Loss of Offsite Power Function, this action recognizes the lack of manual trip provision for a failed channel. For the AFW System pump suction transfer channels, this action recognizes that placing a failed channel in trip during operation is not necessarily a conservative action. Spurious trip of this function could align the AFW System to a source that is not immediately capable of supporting pump suction.~~ If a train or channel is inoperable, 48 hours is allowed to return it to OPERABLE status. The specified Completion Time is reasonable considering the nature of these Functions, the available redundancy, and the low probability of an event occurring during this interval. If the Function cannot be returned to OPERABLE status, the unit must be placed in MODE 3 within the next 6 hours and MODE 4 within the following 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power in an orderly manner and without challenging unit systems. In MODE 4, the unit does not have any analyzed transients or conditions that require the explicit use of the protection functions noted above.

<u>G.1, G.2.1, and G.2.2</u>

Condition G applies to the automatic actuation logic and actuation relays for the Steam Line Isolation [,Turbine Trip and Feedwater Isolation,] and AFW actuation Functions.

The action addresses the train orientation of the SSPS and the master and slave relays for these functions. If one train is inoperable, 6 hours are allowed to restore the train to OPERABLE status. The Completion Time for restoring a train to OPERABLE status is reasonable considering that there is another train OPERABLE, and the low probability of an event occurring during this interval. If the train cannot be returned to OPERABLE status, the unit must be brought to MODE 3 within the next 6 hours and MODE 4 within the following 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly

ACTIONS (continued)

manner and without challenging unit systems. Placing the unit in MODE 4 removes all requirements for OPERABILITY of the protection channels and actuation functions. In this MODE, the unit does not have analyzed transients or conditions that require the explicit use of the protection functions noted above.

5

The Required Actions are modified by a Note that allows one train to be bypassed for up to [ 4 ] hours for surveillance testing provided the other train is OPERABLE. This allowance is based on the reliability analysis (Ref. 8) assumption that 4 hours is the average time required to perform channel surveillance.

3

~~[ H.1 and H.2~~

~~Condition H applies to the automatic actuation logic and actuation relays for the Turbine Trip and Feedwater Isolation Function.~~

~~This action addresses the train orientation of the SSPS and the master and slave relays for this Function. If one train is inoperable, 6 hours are allowed to restore the train to OPERABLE status or the unit must be placed in MODE 3 within the following 6 hours. The Completion Time for restoring a train to OPERABLE status is reasonable considering that there is another train OPERABLE, and the low probability of an event occurring during this interval. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. These Functions are no longer required in MODE 3. Placing the unit in MODE 3 removes all requirements for OPERABILITY of the protection channels and actuation functions. In this MODE, the unit does not have analyzed transients or conditions that require the explicit use of the protection functions noted above.~~

~~The Required Actions are modified by a Note that allows one train to be bypassed for up to [4] hours for surveillance testing provided the other train is OPERABLE. This allowance is based on the reliability analysis (Ref. 8) assumption that 4 hours is the average time required to perform channel surveillance. ]~~

H

I.1 and I.2

Condition I applies to:

ACTIONS (continued)

3

[ ~~• SG Water Level - High High (P-14) (two, three, and four loop units), and~~ ]

- Undervoltage Reactor Coolant Pump.

If one channel is inoperable, 6 hours are allowed to restore one channel to OPERABLE status or to place it in the tripped condition. If placed in the tripped condition, the Function is then in a partial trip condition where one-out-of-two ~~or one-out-of-three~~ logic will result in actuation. ~~The 6 hour Completion Time is justified in Reference 8.~~ Failure to restore the inoperable channel to OPERABLE status or place it in the tripped condition within 6 hours requires the unit to be placed in MODE 3 within the following 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. In MODE 3, these Functions are no longer required OPERABLE.

5

The Required Actions are modified by a Note that allows the inoperable channel to be bypassed for up to [ 4 ] hours for surveillance testing of other channels. The 6 hours allowed to place the inoperable channel in the tripped condition, and the 4 hours allowed for a second channel to be in the bypassed condition for testing, are justified in Reference ~~8~~. 3 5

I

~~J~~.1 and ~~J~~.2

Condition ~~J~~ applies to the AFW pump start on trip of all MFW pumps.

3

~~This action addresses the train orientation of the SSPS for the auto start function of the AFW System on loss of all MFW pumps.~~ The OPERABILITY of the AFW System must be assured by allowing automatic start of the AFW System pumps. If a channel is inoperable, 48 hours are allowed to return it to an OPERABLE status. If the function cannot be returned to an OPERABLE status, 6 hours are allowed to place the unit in MODE 3. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. In MODE 3, the unit does not have any analyzed transients or conditions that require the explicit use of the protection function noted above. The allowance of 48 hours to return the train to an OPERABLE status is justified in Reference 8.

3 5

ACTIONS (continued)

3 J

~~K~~.1, ~~K~~.2.1, and ~~K~~.2.2

(Unit 1) and Extreme Low (Unit 2)

Condition ~~K~~ applies to:

- RWST Level - Low ~~Low~~ Coincident with Safety Injection~~, and~~
- ~~RWST Level - Low Low Coincident with Safety Injection and Coincident with Containment Sump Level - High.~~

RWST Level - Low ~~Low~~ Coincident With SI ~~and Coincident With Containment Sump Level - High~~ provides actuation of switchover to the containment sump. Note that this Function requires the bistables to energize to perform their required action. The failure of up to two channels will not prevent the operation of this Function. However, placing a failed channel in the tripped condition could result in a premature switchover to the sump, prior to the injection of the minimum volume from the RWST. Placing the inoperable channel in bypass results in a two-out-of-three logic configuration, which satisfies the requirement to allow another failure without disabling actuation of the switchover when required. Restoring the channel to OPERABLE status or placing the inoperable channel in the bypass condition within 6 hours is sufficient to ensure that the Function remains OPERABLE, and minimizes the time that the Function may be in a partial trip condition (assuming the inoperable channel has failed ~~high~~). ~~The 6 hour Completion Time is justified in Reference 8.~~ If the channel cannot be returned to OPERABLE status or placed in the bypass condition within 6 hours, the unit must be brought to MODE 3 within the following 6 hours and MODE 5 within the next 30 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 5, the unit does not have any analyzed transients or conditions that require the explicit use of the protection functions noted above.

low

5

6 hours to place a channel in bypass and the

The Required Actions are modified by a Note that allows placing a second channel in the bypass condition for up to [ 4 ] hours for surveillance testing. The total of 12 hours to reach MODE 3 and 4 hours for a second channel to be bypassed is acceptable based on the results of Reference 8.

3 5

BASES

3

ACTIONS (continued)

K

~~L~~.1, ~~L~~.2.1 and ~~L~~.2.2

From CTS Action

Condition ~~L~~ applies to the P-11 and P-12 ~~[and P-14]~~ interlocks.

With one or more channels inoperable, the operator must verify that the interlock is in the required state for the existing unit condition. This action manually accomplishes the function of the interlock. Determination must be made within 1 hour~~.~~ The 1 hour Completion Time is equal to the time allowed by LCO 3.0.3 to initiate shutdown actions in the event of a complete loss of ESFAS function. If the interlock is not in the required state (or placed in the required state) for the existing unit condition, the unit must be placed in MODE 3 within the next 6 hours and MODE 4 within the following 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. Placing the unit in MODE 4 removes all requirements for OPERABILITY of these interlocks.

and may be made by observation of the associated permissive annunciator window(s) (bistable status lights or computer checks).

SURVEILLANCE REQUIREMENTS

The SRs for each ESFAS Function are identified by the SRs column of Table 3.3.2-1.

A Note has been added to the SR Table stating that Table 3.3.2-1 determines which SRs apply to which ESFAS Functions.

Note that each channel of process protection supplies both trains of the ESFAS. When testing Channel I, Train A and Train B must be examined. Similarly, Train A and Train B must be examined when testing Channel II, Channel III, and Channel IV (if applicable). The CHANNEL CALIBRATION and COTs are performed in a manner that is consistent with the assumptions used in analytically calculating the required channel accuracies.

3

- REVIEWER'S NOTE -

Certain Frequencies are based ~~on approved~~ topical reports. In order for a licensee to use these ~~times, the~~ licensee ~~must justify~~ the Frequencies as required by ~~the staff~~ SER for the topical report.

No changes are based on Topical reports.

SR 3.3.2.1

A CHANNEL CHECK is performed only on those channels that have channel parameter displays available.

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a

SURVEILLANCE REQUIREMENTS (continued)

similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including indication and reliability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

The Frequency is based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

SR 3.3.2.2

SR 3.3.2.2 is the performance of an ACTUATION LOGIC TEST. The SSPS is tested every 31 days on a STAGGERED TEST BASIS, using the semiautomatic tester. The train being tested is placed in the bypass condition, thus preventing inadvertent actuation. Through the semiautomatic tester, all possible logic combinations, with and without applicable permissives, are tested for each protection function. In addition, the master relay coil is pulse tested for continuity. This verifies that the logic modules are OPERABLE and that there is an intact voltage signal path to the master relay coils. The Frequency of every 31 days on a STAGGERED TEST BASIS is adequate. It is based on industry operating experience, considering instrument reliability and operating history data.

3

~~SR 3.3.2.3~~

N/A to BVPS

~~SR 3.3.2.3 is the performance of an ACTUATION LOGIC TEST as described in SR 3.3.2.2, except that the semiautomatic tester is not used and the continuity check does not have to be performed, as explained in the Note. This SR is applied to the balance of plant actuation logic and relays that do not have the SSPS test circuits installed to utilize the semiautomatic tester or perform the continuity check. This test is also~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

3

~~performed every 31 days on a STAGGERED TEST BASIS. The Frequency is adequate based on industry operating experience, considering instrument reliability and operating history data.~~

SR 3.3.2.~~4~~ 3

SR 3.3.2.~~4~~ 3 is the performance of a MASTER RELAY TEST. The MASTER RELAY TEST is the energizing of the master relay, verifying contact operation and a low voltage continuity check of the slave relay coil. Upon master relay contact operation, a low voltage is injected to the slave relay coil. This voltage is insufficient to pick up the slave relay, but large enough to demonstrate signal path continuity. This test is performed every 31 days on a STAGGERED TEST BASIS. The time allowed for the testing (4 hours) and the surveillance interval are justified in Reference ~~8.~~ 5

SR 3.3.2.~~5~~ 4

SR 3.3.2.~~5~~ 4 is the performance of a COT.

6

A COT is performed on each required channel to ensure the entire channel will perform the intended Function. Setpoints must be found within the Allowable Values specified in Table 3.3.2-~~1.~~ (excluding time constants which are verified during CHANNEL CALIBRATIONS). A successful test of ~~the~~ any required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable COT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications ~~and non-Technical Specifications tests at least once per refueling interval with applicable extensions.~~ Surveillance Requirements.

The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology. The setpoint shall be left set consistent with the assumptions of the current unit specific setpoint methodology.

7

~~The "as found" and "as left" values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis (Ref. 8) when applicable.~~

The Frequency of 92 days is justified in Reference ~~8.~~ 5

The Surveillance Frequency is revised by Notes that specify the separate Unit 1 and Unit 2 test Frequencies. For the Unit 2 slave relays, the surveillance is required to be performed every 92 days, or if the conditions specified in the Note are met, every 12 months. For Unit 1 slave relays, the surveillance is required to be performed every 18 months. The specified Frequencies are adequate to verify relay operability for both Units. For Unit 2 the required Frequency is justified in Reference 6, and for Unit 1, the required Frequency is based on operating experience.

Move text to before SR 3.3.2.6

QUIREMENTS (continued)

SR 3.3.2.6

SR 3.3.2.6 is the performance of a SLAVE RELAY TEST. The SLAVE RELAY TEST is the energizing of the slave relays. Contact operation is verified in one of two ways. Actuation equipment that may be operated in the design mitigation MODE is either allowed to function, or is placed in a condition where the relay contact operation can be verified without operation of the equipment. ~~Actuation equipment that may not be operated in the design mitigation MODE is prevented from operation by the SLAVE RELAY TEST circuit.~~ For this latter case, contact operation is verified by a continuity check of the circuit containing the slave relay. ~~This test is performed every [92] days. The Frequency is adequate, based on industry operating experience, considering instrument reliability and operating history data.~~

3

3

SR 3.3.2.~~7~~ 5

the SSPS logic circuit.

The

SR 3.3.2.~~7~~ is the performance of a TADOT every [92] days. This test is a check of the ~~Loss of Offsite Power,~~ Undervoltage RCP~~, and AFW Pump Suction Transfer on Suction Pressure - Low~~ Functions. ~~Each~~ Function is ~~tested~~ up to~~, and including, the master transfer relay coils~~. A successful test of ~~the~~ required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications ~~and non-Technical Specifications tests at least once per refueling interval with applicable extensions.~~

any

6

Surveillance Requirements.

3

~~The test also includes trip devices that provide actuation signals directly to the SSPS.~~ The SR is modified by a Note that excludes verification of setpoints for relays. Relay setpoints require elaborate bench calibration and are verified during CHANNEL CALIBRATION. The Frequency is adequate. It is based on industry operating experience, considering instrument reliability and operating history data.

SR 3.3.2.~~8~~ 7

any

6

SR 3.3.2.~~8~~ is the performance of a TADOT. This test is a check of the Manual Actuation Functions and AFW pump start on trip of all MFW pumps. It is performed every [18] months. Each Manual Actuation Function is tested up to, and including, the master relay coils. A successful test of ~~the~~ required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of

8

P-4 interlock,

BASES

SURVEILLANCE REQUIREMENTS (continued) Surveillance Requirements. 6

the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications ~~and non-Technical Specifications tests at least once per refueling interval with applicable extensions.~~ In some instances, the test includes actuation of the end device (i.e., pump starts, valve cycles, etc.). The Frequency is adequate, based on industry operating experience and is consistent with the typical refueling cycle. The SR is modified by a Note that excludes verification of setpoints during the TADOT ~~for manual initiation Functions. The manual initiation~~ Functions have no associated setpoints. , since these

3 SR 3.3.2.~~9~~ 8

SR 3.3.2.~~9~~ is the performance of a CHANNEL CALIBRATION.

A CHANNEL CALIBRATION is performed every [18] months, or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to measured parameter within the necessary range and accuracy.

CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the unit specific setpoint methodology. The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology.

The Frequency of [18] months is based on the assumption of an [18] month calibration interval in the determination of the magnitude of equipment drift in the setpoint methodology.

This SR is modified by a Note stating that this test should include verification that the time constants are adjusted to the prescribed values where applicable.

3 SR 3.3.2.~~10~~ 9 Licensing Requirements Manual.

This SR ensures the individual channel ESF RESPONSE TIMES are less than or equal to the maximum values assumed in the accident analysis. Response Time testing acceptance criteria are included in the ~~Technical Requirements Manual, Section 15 (Ref. 9)~~. Individual component response times are not modeled in the analyses. The analyses model the overall or total elapsed time, from the point at which the parameter

BASES

or by such means as utilizing a step change input

9

SURVEILLANCE REQUIREMENTS (continued)

CTS SR

Each verification shall include at least one logic train such that both logic trains are verified at least once per 36 months.

exceeds the Trip Setpoint value at the sensor, to the point at which the equipment in both trains reaches the required functional state (e.g., pumps at rated discharge pressure, valves in full open or closed position).

For channels that include dynamic transfer functions (e.g., lag, lead/lag, rate/lag, etc.), the response time test may be performed with the transfer functions set to one with the resulting measured response time compared to the ~~appropriate FSAR response time~~. Alternately, the response time test can be performed with the time constants set to their nominal value provided the required response time is analytically calculated assuming the time constants are set at their nominal values. The response time may be measured by a series of overlapping tests such that the entire response time is measured.

response time specified in the LRM.

3

- REVIEWER'S NOTE -
~~Applicable portions of the following Bases are applicable for plants adopting WCAP-13632-P-A. and/or WCAP-14036-P.~~

The following alternate means for verifying response times (i.e., summation of allocated times) is only applicable to Unit 2.

Response time may be verified by actual response time tests in any series of sequential, overlapping or total channel measurements, or by the summation of allocated sensor, signal processing and actuation logic response times with actual response time tests on the remainder of the channel. Allocations for sensor response times may be obtained from: (1) historical records based on acceptable response time tests (hydraulic, noise, or power interrupt tests), (2) in place, onsite, or offsite (e.g., vendor) test measurements, or (3) utilizing vendor engineering specifications. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," dated January 1996, provides the basis and methodology for using allocated sensor response times in the overall verification of the channel response time for specific sensors identified in the WCAP. Response time verification for other sensor types must be demonstrated by test.

and WCAP-15413, "Westinghouse 7300A ASIC-Based Replacement Module Licensing Summary Report"

CTS Bases

[WCAP-14036-P, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," provides the basis and methodology for using allocated signal processing and actuation logic response times in the overall verification of the protection system channel response time.] The allocations for sensor, signal conditioning, and actuation logic response times must be verified prior to placing the component in operational service and re-verified following maintenance that may adversely affect response time. In general, electrical repair work does not impact

SURVEILLANCE REQUIREMENTS (continued)

WCAP-15413 provides bounding response times where 7300 cards have been replaced with ASICs cards.

CTS Bases

response time provided the parts used for repair are of the same type and value. Specific components identified in the WCAP may be replaced without verification testing. One example where response time could be affected is replacing the sensing assembly of a transmitter.

ESF RESPONSE TIME tests are conducted on an ~~[18]~~ month STAGGERED TEST BASIS. Testing of the final actuation devices, which make up the bulk of the response time, is included in the testing of each channel. The final actuation device in one train is tested with each channel. Therefore, staggered testing results in response time verification of these devices every [18] months. The [18]-month Frequency is consistent with the typical refueling cycle and is based on unit operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences.

600 CTS Value

This SR is modified by a Note that clarifies that the turbine driven AFW pump is tested within 24 hours after reaching ~~[1000]~~ psig in the SGs.

secondary side of the

8

~~SR 3.3.2.11~~

~~SR 3.3.2.11 is the performance of a TADOT as described in SR 3.3.2.8, except that it is performed for the P-4 Reactor Trip Interlock, and the Frequency is once per RTB cycle. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. This Frequency is based on operating experience demonstrating that undetected failure of the P-4 interlock sometimes occurs when the RTB is cycled.~~

~~The SR is modified by a Note that excludes verification of setpoints during the TADOT. The Function tested has no associated setpoint.~~

3

REFERENCES

1. ~~FSAR, Chapter [6].~~ UFSAR Chapter 14 (Unit 1) and UFSAR Chapter 15 (Unit 2).

~~2. FSAR, Chapter [7].~~

~~3. FSAR, Chapter [15].~~

2 ~~4.~~ IEEE-279-1971.

BASES

REFERENCES (continued)

Westinghouse Setpoint Methodology for Protection Systems, WCAP-11419, Rev. 5 (Unit 1) and WCAP-11366, Rev. 7 (Unit 2).

3

4 ~~5.~~ 10 CFR 50.49.

3 ~~6. Plant-specific setpoint methodology study.~~

~~7. NUREG-1218, April 1988.~~

5 ~~8.~~ WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990.

~~9. Technical Requirements Manual, Section 15, "Response Times."~~

~~10. Regulatory Guide 1.105, Revision 3, "Setpoints for Safety-Related Instrumentation."~~

~~[ 11. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," January 1996. ]~~

~~[ 12. WCAP-14036-P, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," December 1995. ]~~

6. WCAP-15887, Revision 2, "Probabilistic Risk Analysis of the Slave Relay Surveillance Test Interval Extension for Beaver Valley Power Station, Unit 2," December, 2002.

# 3.3.2 BASES INSERTS

1. The nominal trip setpoints account for calibration tolerances, instrument uncertainties, instrument drift, and severe environment errors for those ESFAS channels that must function in harsh environments as defined by 10 CFR 50.49 (Ref. 4). The nominal trip setpoints are specified in the Licensing Requirements Manual (LRM). The Allowable Values specified in the Technical Specifications are determined by adding (or subtracting) the calibration accuracy of the trip device to the nominal trip setpoint in the non-conservative direction (i.e., toward or closer to the safety analysis limit) for the application. The Allowable Values remain conservative with respect to the analytical limits. For those channels that provide trip actuation via a bistable in the process racks, the calibration accuracy is defined by the rack calibration accuracy term. For a limited number of channels that provide trip actuation without being processed via the process racks (e.g., undervoltage relay channels) the Allowable Value is defined by device drift or repeatability (Ref. 3). The application of the calibration accuracy term (or device drift as applicable) to each ESFAS setpoint results in a "calibration tolerance band" for each setpoint. Thus, the trip setpoint value is considered a "nominal" value (i.e., expressed as a value with a calibration tolerance) for the purposes of the COT and CHANNEL CALIBRATION. The calibration tolerance band for each ESFAS setpoint is specified in plant procedures.

# 3.3C

# ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION BASES

# JUSTIFICATIONS FOR DEVIATION

## *ITS 3.3.2 Engineered Safety Feature Actuation System Instrumentation Bases*

JUSTIFICATION FOR DEVIATION (JFD)

1. This JFD addresses all changes made to the Bases that are editorial in nature and that do not affect the technical content of the Bases. The changes addressed by this JFD are made to correct spelling, grammar, and capitalization errors as well as incorporate wording preferences. In some cases, these changes are necessary to make the descriptions of reference content correct (e.g., the content of the BVPS UFSARs may not be exactly the same as described in the ISTS Bases) or to make the actual location of information discussed correct for BVPS (e.g., the location of trip setpoints outside of the TS or the location of the list of the number of required channels for each ESFAS Function). The reasons for the changes addressed by this JFD are considered self-explanatory and a separate more detailed explanation unnecessary. These changes do not significantly impact the technical discussions contained in the Bases and in general improve the clarity or correctness of the affected text or make the text more specific to BVPS. As such, the proposed changes are acceptable.
2. Changes are made to the ISTS Bases to reflect the BVPS specific setpoint methodology. The BVPS trip setpoints associated with the ESFAS Functions are nominal values with a calibration tolerance. The nominal trip setpoints are specified in the Licensing Requirements Manual not the TS. The BVPS Allowable Value is determined by the nominal trip setpoint calibration tolerance. The BVPS ESFAS Function operability is determined by verifying the Function is within the specified Allowable Value (setpoint calibration tolerance). The changes associated with this JFD are required to maintain consistency with the current BVPS setpoint methodology and the current BVPS licensing basis as specified in the CTS.
3. The standard bases text is deleted or revised to make the generic bases discussion more accurate or complete for BVPS. The proposed revisions include changes resulting from revisions to the corresponding TS requirements that are justified in the associated JFDs for the TS. The proposed changes also include additional or revised references, additional or revised design or safety analysis descriptions that make the standard bases discussion more specific to the corresponding BVPS documentation, design, safety analyses, or licensing basis. In some cases, additional information is added that was moved from the CTS or that is consistent with the existing CTS Bases. The proposed changes enhance the ISTS Bases discussion and help to make the generic bases text more specific to each BVPS Unit.
4. The ISTS Bases text is revised to remove the details of specific instrument locations in the plant. This level of detail is not necessary in the TS bases to understand the purpose of the ESFAS Function or to determine the ESFAS Function operability. As this information was not included in the RTS Bases, the proposed change makes the level of detail in the RTS and ESFAS Bases more consistent. In addition, the TS are not intended to control the details of the plant design and this type of design information is contained in other more

appropriate plant design documentation. The location of the instrumentation is included in the ISTS Bases to help explain why the associated instrument setpoint may or may not include an allowance for adverse environmental conditions. The allowances used in developing each setpoint are documented in the setpoint methodology WCAP and need not be repeated in the TS bases. However, the information regarding whether or not the setpoint contains an allowance for adverse environmental conditions is retained in the bases consistent with the ISTS.

5. The first text referring to Reference 8 is deleted. This text is redundant to the text referring to Reference 8 that occurs later in the same bases discussion. There is no need to refer twice to reference 8 for the same reason in the same bases discussion.

6. The standard Bases text describing the acceptable test of required relay contacts in the bases for a Channel Operational Test (COT) and TADOT is revised to refer to "any" required contacts and to delete references to non-TS testing and a specific surveillance interval. By replacing "the" with "any", the proposed change removes the implication that the applicable instrument channel always has required relay contact(s). If the instrument channel for which the bases description applies has any required relay contacts, the discussion will still apply. This change will reduce the potential for confusion if a channel does not have relay contacts associated with it. In addition, the references to non-TS testing and a specific surveillance interval are removed. References to non-TS testing has no place in the TS. If such testing was required for the operability of the affected instrument channels it would be in the TS and if it is not associated with the operability of the required instrument channel it does not add any value to the bases discussion and may cause confusion regarding the operability requirements of the required instrumentation. The general reference that all contacts will be tested at least once per refueling is deleted because the specific surveillance interval for any TS testing is provided in the associated surveillance and does not need to be repeated in every Channel Operational Test bases description. In addition, specific surveillance intervals for various TS required instrumentation may change due to TS changes resulting from engineering evaluations, PRA, or other reasons. These changes could result in surveillance intervals that exceed a refueling cycle. Therefore, it is not appropriate or necessary to make a general statement that all required contacts will be tested at least once per refueling. The applicable TS will continue to define the surveillance interval associated with any required instrumentation.

7. The bases discussion regarding the recording of as found and as left values in order to meet the requirements of Reference 8 (WCAP-10271) is deleted. BVPS implemented the provisions of this WCAP approximately 10 years ago and addressed the requirements of the WCAP at that time. The applicable ESFAS setpoint methodology has been revised since implementation of WCAP-10271 and accounts for changes resulting from WCAP-10271. The current setpoint methodology of record (WCAP-11419, Rev. 3 (Unit 1) and WCAP-11366, Rev. 5 (Unit 2)) contains the applicable assumptions regarding instrument drift and other allowances that affect the nominal trip setpoints and Allowable Values for each ESFAS Function. The ISTS bases paragraph preceding the deleted text, requires that the differences between the as found and as left setpoint values be consistent with the assumptions of the current unit specific setpoint methodology. The text of this preceding paragraph is retained in the BVPS ITS bases. The verification that the assumptions of the

setpoint methodology are met provides the required assurance that the ESFAS setpoints are maintained operable and effectively encompasses the requirements of the deleted paragraph.

8. The Bases description of ISTS SR 3.3.2.11 is deleted consistent with the elimination of this surveillance from the corresponding ITS 3.3.2 in Enclosure 1. This surveillance is only applicable to the P-4 interlock. The BVPS ITS assigns ITS SR 3.3.2.7 (ISTS SR 3.3.2.8) to the P-4 interlock instead of ISTS 3.3.2.11. See the JFD associated with the change to the corresponding surveillance requirement in the Enclosure 1 markup of ITS 3.3.2.

9. The response time surveillance bases is revised to reflect potential alternative response time testing methods with regard to testing instrument channels with time constants. The use of a step change input signal to verify the response time of a channel eliminates the need to set the time constants to one and results in the same response time whether the time constants are set to nominal values or one. This method may be used in some cases due to the difficulty in resetting certain time constants back to their nominal values following testing.

10. The ISTS Bases text for Action Condition C is revised to incorporate a clarification regarding the applicability of the Action. Action Condition C addresses an inoperable train of ESFAS actuation logic or actuation relays. The Completion Time of 6 hours is a relatively short Action time intended to address the loss of a train of actuation logic or relays. However, there are many actuation relays that must be addressed by this Action and the ISTS ESFAS Actions do not include an Action applicable to less than an entire train of actuation relays. In the course of surveillance testing or maintenance, it is likely that a single inoperable relay may be discovered that only affects a single ESF component or system. In this case, the application of the short Completion Time associated with the failure of an entire train of logic and relays would be overly conservative and inappropriate. The proposed clarification addresses this situation and directs the tech spec user to enter the applicable Actions of the affected ESF system or component instead of the Actions for an entire train of ESFAS logic and relays. The proposed clarification is reasonable and appropriate considering that if the affected ESF system or component were inoperable for reasons other than the actuating relay, substantially more time may be available in the Action Condition(s) applicable to that ESF component or system. In addition, the proposed clarification is similar to a Bases clarification approved by the NRC in the Farley Nuclear Plant ISTS conversion.

11. The ISTS Bases text describing ESFAS Function 5, Turbine Trip and Feedwater Isolation, is revised to remove redundant and unrelated text. The deleted paragraph seems to primarily describe other SI and P-4 interlock functions. The SI function is fully described in the SI portion of the ESFAS bases and the P-4 interlock is fully described in the P-4 Bases (Function 8.a on ESFAS bases page 34). The inclusion of this additional text describing SI and P-4 Functions in the bases for the Turbine Trip and Feedwater Isolation Function is unnecessary to understand the Turbine Trip and Feedwater Isolation Function and potentially confusing as it gives the impression that the Turbine Trip and Feedwater Isolation Function also starts the AFW pumps. The elimination of this descriptive text does not introduce a technical change to the explanation of the Turbine Trip and Feedwater Isolation Function.

# ENCLOSURE 3

## *CHANGES TO THE CTS*

## CURRENT TECHNICAL SPECIFICATION (CTS) MARKUP
## &
## DISCUSSION OF CHANGES (DOCs)

Introduction

This enclosure contains the markup of the current BVPS Unit 2 Technical Specifications (TS), and where necessary to show a change to a BVPS Unit 1 TS that is not addressed by the associated Unit 2 markup and DOCs, a BVPS Unit 1 TS page is included. If a Unit 1 page is included it will be marked to show the change to the Unit 1 specific difference, and will not typically contain markups that repeat the applicable changes already addressed in the corresponding Unit 2 markup. Therefore, unless otherwise stated, each DOC applies to both Units 1 and 2 even though the change may only be marked on the Unit 2 TS.

The CTS is marked-up to show the changes necessary to convert to the Improved Standard Technical Specifications (ISTS) in NUREG-1431, Revision 2. The marked-up CTS result in the BVPS specific Improved Technical Specifications (ITS) contained in Enclosure 1.

In order to facilitate the review of the changes to the CTS, the marked-up CTS are presented in their original numerical order, not ISTS numerical order. The new ITS number is marked at the top of the first page of each CTS and the disposition of each CTS and ISTS is summarized in the Table included at the beginning of Enclosure 1 for each TS Section.

The marked-up TS are followed by the applicable DOCs. Each technical change and more complex administrative change marked on the TS has a unique alpha-numeric designator that corresponds to a specific DOC. Due to the large number of format, editorial and presentation differences between the CTS and the new standard TS, not all of these changes are identified in the marked-up CTS pages. The single generic A.1 administrative change DOC designated on the first page of each marked-up CTS addresses all the marked and unmarked editorial, format, and presentation changes necessary to convert that entire CTS to the corresponding new standard TS. Only the more complex (less obvious) administrative type changes made to the CTS are identified with individual administrative DOCs (i.e., A.2, A.3, etc.).

The DOCs are grouped by the category of the change (i.e., less restrictive, more restrictive, administrative, etc). Each category of change is also associated with a No Significant Hazards Consideration (NSHC) for that change in Enclosure 4.

Certain categories of change also have a sub-category or change type associated with the DOC. The sub-category or change type is used to further group the CTS changes in more specific sub-categories that utilize a common NSHC or DOC.

Each CTS change marked as "Less Restrictive", with no subcategory identified in the associated DOC to reference a generic NSHC, will have a "Specific" NSHC included in Enclosure 4. A description of the categories and types of changes follows.

ENCLOSURE 3 (continued)

Categories and Types of Changes to the CTS

I. The major categories utilized to group changes to the CTS are as follows:

A - Administrative

L - Less Restrictive

M - More Restrictive

LA - Removed Detail (Sections of Tech Spec text removed from CTS)

R - Relocated (Entire Tech Spec requirement removed from CTS)

II. The subcategories of Less Restrictive "L" changes are as follows: (1)

1. Relaxation of LCO Requirements
2. Relaxation of Applicability
3. Relaxation of Completion Time
4. Relaxation of Required Action
5. Deletion of Surveillance Requirement
6. Relaxation of Surveillance Requirement Acceptance Criteria
7. Relaxation of Surveillance Frequency
8. Deletion of Reporting Requirement

III. The types of Removed Detail "LA" changes are as follows: (2)

1. Removing Details of System Design and System Description, Including Design Limits
2. Removing Descriptions of System Operation
3. Removing Procedural Details for Meeting Tech Spec Requirements and Related Reporting Requirements
4. Removing Administrative Requirements Redundant to Regulations
5. Removing Performance Requirements for Indication-Only Instruments and Alarms

(1) Each subcategory of Less Restrictive change is associated with a corresponding NSHC in Enclosure 4.

(2) The types of Removed Detail changes all share a common "LA" NSHC in Enclosure 4.

## UNIT 2 PAGES

INSTRUMENTATION

A.1

~~3/4.3.2~~ ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

3.3.2

LIMITING CONDITION FOR OPERATION

~~3.3.2.1~~ The Engineered Safety Feature Actuation System (ESFAS) instrumentation ~~channels and interlocks~~ shown in Table ~~3.3-3~~ shall be OPERABLE.

for each Function

3.3.2-1

APPLICABILITY: As shown in Table ~~3.3-3~~.

ACTION:

~~With an ESFAS instrumentation channel or interlock inoperable, take the ACTION shown in Table 3.3-3.(2)~~

**ISTS Condition A**
**One or more Functions with one or more required channels or trains inoperable. Enter the Condition referenced in Table 3.3.2-1 for the channel(s) or train(s). Immediately**

**Condition**

**3.3.2 Actions Note**

~~(2)~~ Separate ~~ACTION statement~~ entry is allowed for each Function.

INSTRUMENTATION

~~3/4.3.2~~ ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

3.3.2

A.2

SURVEILLANCE REQUIREMENTS

4.3.2.1.1 Each engineered safety feature actuation system instrumentation channel and interlock and the automatic actuation logic with master and slave relays shall be demonstrated OPERABLE by the performance of the ESFAS Instrumentation Surveillance Requirements(1) during the MODES and at the frequencies shown in Table 4.3-2.

L16

4.3.2.1.2 The logic for the interlocks shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of channels affected by interlock operation. The total interlock function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by interlock operation.

4.3.2.1.3 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESF function shall be verified to be within the limit at least once per 18 months. Each verification shall include at least one logic train such that both logic trains are verified at least once per 36 months and one channel per function such that all channels are verified at least once per N times 18 months where N is the total number of redundant channels in a specific ESF function as shown in the "~~Total No. Of~~ Channels" Column of Table 3.3-3.

Required

SR Bases

Staggered Test Basis

SR 3.3.2.9 Note: Not required to be performed for the turbine-driven AFW Pump until 24 hours after SG pressure is > 600 psig.

LA1 A3 L1

(1) For the automatic actuation logic, the surveillance requirements shall be the application of various simulated input conditions in conjunction with each possible interlock logic state and verification of the required logic output including, as a minimum, a continuity check of output devices. For the actuation relays, the surveillance requirements shall be the energization of each master and slave relay and verification of OPERABILITY of each relay. The test of master relays shall include a continuity check of each associated slave relay. The test of slave relays (to be performed at least once per 92 days in lieu of at least once per 31 days) shall include, as a minimum, a continuity check of associated actuation devices that are not testable. The slave relay test frequency can be extended to once per 12 months provided a satisfactory contact loading analysis has been completed, and a satisfactory slave relay service life has been established, for the slave relay being tested.



Definition requirements moved to Section 1.0. Changes to the definitions of test requirements are addressed in TS Section 1.0 (Definitions).

Surveillance Frequency requirements moved to SR 3.3.2.6 and assigned to the applicable Actuation Relay Functions on CTS Table 4.3-2 and ITS Table 3.3.2-1 (see Unit 2 CTS Table 4.3-2 markup for details)

DRAFT PAGE FROM LAR # 317/190

A5 3.3.2-1 A6 UNIT 2 A4 REQUIRED FUNCTION OR OTHER SPECIFIED CONDITIONS CONDITION

TABLE ~~3.3-3~~

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

| ~~FUNCTIONAL UNIT~~ | ~~TOTAL NO.~~ OF CHANNELS | CHANNELS TO TRIP | ~~MINIMUM CHANNELS OPERABLE~~ | ALLOWABLE VALUE | APPLICABLE MODES | ~~ACTION~~ |
|---|---|---|---|---|---|---|
| 1. SAFETY INJECTION AND FEEDWATER ISOLATION | | | | | | |
| a. Manual Initiation | 2 | 1 | ~~2~~ | N.A. | 1, 2, 3, 4 | ~~18~~ B |
| b. Automatic Actuation Logic and Actuation Relays (A13 Trains) | 2 | 1 | ~~2~~ | N.A. | 1, 2, 3, 4 | ~~13~~ C, 36 (L8, LA6) |
| c. Containment Pressure-High | 3 | 2 | ~~2~~ | ≤ 5.3 psig | 1, 2, 3 | ~~14~~ D |
| d. Pressurizer Pressure-Low | 3 | 2 | ~~2~~ | ≥ 1852 psig | 1, 2, 3~~(1)~~ (a) | ~~14~~ D |
| e. Steamline Pressure-Low | 3/~~loop~~ steam line | 2/loop any loop | ~~2/operating loop)~~ | ≥ 494 psig* | 1, 2 3~~(1)~~ (a) | ~~14~~ D |
| 7. ~~1.1~~ ~~SAFETY INJECTION-TRANSFER FROM INJECTION TO THE RECIRCULATION MODE~~ Automatic Switchover to Containment Sump (A8) | | | | | | |
| a. Automatic Actuation Logic Coincident with Safety Injection Signal (A13 Trains) | 2 | 1 | ~~2~~ | N.A. | 1, 2, 3, 4 | ~~18~~ B |
| b. Refueling Water Storage Tank Level-Extreme Low (Unit 2) (LA2 Bases) | 4 | 2 | ~~3~~ | ≥ 31' 8" and ≤ 31' 10" | 1, 2, 3, 4 | ~~16~~ J |

* Time constants utilized in the lead-lag controllers for Steam Line Pressure-Low are $\tau_1 \geq 50$ seconds and $\tau_2 \leq 5$ seconds. CHANNEL CALIBRATION shall ensure that these time constants are adjusted to these values.

Note in Channel Calibration SR. A9

DRAFT PAGE FROM LAR # 317/190

A4 A5 A6 A4

~~TABLE 3.3-3~~ 3.3.2-1 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION UNIT 2

| ~~FUNCTIONAL UNIT~~ FUNCTION | ~~TOTAL NO. OF CHANNELS~~ REQUIRED | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | ALLOWABLE VALUE | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | ~~ACTION~~ CONDITION |
|---|---|---|---|---|---|---|
| 2. CONTAINMENT SPRAY | | | | | | |
| a. Manual Initiation (A10) | ~~2 sets (2 switches/set)~~ 2 per train, 2 trains | 1 set | ~~2 sets~~ | N.A. | 1, 2, 3, 4 | ~~18~~ B |
| b. Automatic Actuation Logic and Actuation Relays | 2 Trains (A13) | 1 | ~~2~~ | N.A. | 1, 2, 3, 4 | ~~13~~ C |
| c. Containment Pressure--High-High | 4 | 2 (LA2) | ~~3~~ | ≤ 11.4 psig | 1, 2, 3 | ~~16~~ E |
| 3. CONTAINMENT ISOLATION | | | | | | |
| a. Phase "A" Isolation | | | | | | |
| 1) Manual Initiation | 2 | 1 | ~~2~~ | N.A. | 1, 2, 3, 4 | ~~18~~ B |
| 2) Automatic Actuation Logic and Actuation Relays | 2 Trains (A13) | 1 Bases | ~~2~~ | N.A. | 1, 2, 3, 4 | ~~13~~ C |
| 3) Safety Injection | See Item 1. above for all Safety Injection initiating functions and requirements. | | | | | |
| b. Phase "B" Isolation | | | | | | |
| 1) Manual Initiation (A10) | ~~2 sets (2 switches/set)~~ 2 per train, 2 trains | 1 set | ~~2 sets~~ | N.A. | 1, 2, 3, 4 | ~~18~~ B |
| 2) Automatic Actuation Logic and Actuation Relays | 2 Trains (A13) | 1 | ~~2~~ | N.A. | 1, 2, 3, 4 | ~~13~~ C |
| 3) Containment Pressure--High-High | 4 | 2 Bases (LA2) | ~~3~~ (A5) | ≤ 11.4 psig | 1, 2, 3, ~~4~~ (L4) | ~~16~~ E |

DRAFT PAGE FROM LAR # 317/190

3.3.2-1 A6 UNIT 2

A5 REQUIRED

TABLE ~~3.3-3~~ (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTION A4 | OR OTHER SPECIFIED CONDITIONS | A4 CONDITION

| ~~FUNCTIONAL UNIT~~ | ~~TOTAL NO. OF CHANNELS~~ | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | ALLOWABLE VALUE | APPLICABLE MODES | ~~ACTION~~ |
|---|---|---|---|---|---|---|
| 4. STEAM LINE ISOLATION | | | | | | |
| a. Manual Initiation (Unit 2 only) | | | | | | |
| ~~1. Individual~~ | ~~1/steam line~~ | ~~1/steam line~~ | ~~1/operating steam line~~ | ~~N.A.~~ | ~~1, 2, 3~~ | ~~41~~ |
| ~~2. System~~ | ~~2 sets (2 switches/set)~~ 2 per train, 2 trains | 1 set | ~~2 sets~~ | N.A. | 1, 2(b), 3(b) | ~~18~~ F |
| b. Automatic Actuation Logic and Actuation Relays | 2 | 1 Trains | ~~2~~ | N.A. | 1, 2(b), 3(b) | ~~13~~ G |
| c. Containment Pressure Intermediate-High-High | 3 | 2 | ~~2~~ | ≤ 7.3 psig | 1, 2(b), 3(b) | ~~14~~ D |
| d. Steamline Pressure ~~Low~~ (1) Low | 3/~~loop~~ Steam Line | 2/loop any loop | ~~2/operating loop~~ | ≥ 494 psig* | 1, 2(b), 3~~(1)~~(a)(b) | ~~14~~ D |
| ~~e. Steamline Pressure Rate - High Negative~~ (2) Negative Rate - High | 3/~~loop~~ Steam Line | 2/loop any loop | ~~2/operating loop~~ | ≤ 103.6 psi with a time constant ≥ 50 seconds | 3~~(2)~~(c) | ~~14~~ D |

L2 A10 A13 A11 L5 LA2 Bases

L5 (b) Except when all MSIVs are closed and deactivated.

* Time constants utilized in the lead-lag controllers for Steam Line Pressure-Low are $\tau_1 \geq 50$ seconds and $\tau_2 \leq 5$ seconds. CHANNEL CALIBRATION shall ensure that these time constants are adjusted to these values.

Note in Channel Calibration SR. A9

Draft PAGE FROM UNIT 2 LAR # 197

REQUIRED A5 3.3.2-1 A6 UNIT 2

FUNCTION A4 OR OTHER SPECIFIED CONDITIONS A4 CONDITION

TABLE ~~3.3-3~~ (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

A13 Trains M1 3 LA5 Bases L6 (d) G D SG LA2 Bases

| ~~FUNCTIONAL UNIT~~ | ~~TOTAL NO.~~ OF CHANNELS | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | ALLOWABLE VALUE | APPLICABLE MODES | ~~ACTION~~ |
|---|---|---|---|---|---|---|
| 5. TURBINE TRIP & FEEDWATER ISOLATION | | | | | | |
| a. Automatic Actuation Logic and Actuation Relays | 2 | 1 | 2 | N.A. | 1, 2 | 42 |
| b. Steam Generator Water Level--High-High, P-14 | 3/~~loop~~ | 2/loop in any operating loop | 2/loop in each operating loop | ≤ 92.7% of narrow range instrument span | 1, 2, 3 | 14 |
| c. Safety Injection | See Item 1 above for all Safety Injection initiating functions and requirements. | | | | | |
| 6. LOSS OF POWER | | | | | | |
| a. 4.16kv Emergency Bus | | | | | | |
| 1. Undervoltage (Trip Feed) | 2/4.16kv Bus | 2/4.16kv Bus | 2/4.16kv Bus | ≥ 71.2% of rated Bus Voltage with a 1 ± 0.1 second time delay | 1, 2, 3, 4 | 33 |
| 2. Undervoltage (Start Diesel) | 1/4.16kv Bus | 1/4.16kv Bus | 1/4kv Bus | ≥ 71.2% of rated Bus Voltage, 20 cycles ± 2 cycles | 1, 2, 3, 4 | 33 |
| b. 4.16kv Emergency Bus (Degraded Voltage) | 2/4.16kv Bus | 2/Bus | 2/Bus | ≥ 93.1% of rated Bus Voltage with a 90 ± 5 second time delay | 1, 2, 3, 4 | 34 |

Moved to ITS LCO 3.3.5. Changes to this material are addressed in the markups and DOCs associated with ITS LCO 3.3.5.

A7 L6

(d) Except when all Main Feedwater Lines are isolated by either closed and deactivated MFIVs, MFRVs and associated bypass valves, or closed manual valves.

DRAFT PAGE FROM UNIT 2 LAR # 197

A5 REQUIRED 3.3.2-1 A6 UNIT 2

TABLE ~~3.3-3~~ (Continued)

A4 FUNCTION LA2 A4 OR OTHER SPECIFIED CONDITIONS CONDITION

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

| ~~FUNCTIONAL UNIT~~ | ~~TOTAL NO. OF CHANNELS~~ | CHANNELS TO TRIP | ~~MINIMUM CHANNELS OPERABLE~~ | ALLOWABLE VALUE | APPLICABLE MODES | ~~ACTION~~ |
|---|---|---|---|---|---|---|
| 6. LOSS OF POWER (Continued) | | | | | | |
| c. 480 Volt Emergency Bus (Degraded Voltage) | 2/480v Bus | 2/Bus | 2/Bus | ≥ 93.1% of rated Bus Voltage with a 90 ± 5 second time delay | 1, 2, 3, 4 | 34 |
| 6 ~~7~~. AUXILIARY FEEDWATER ~~(3)~~ | | | | | | |
| a. Automatic Actuation Logic and Actuation Relays | Trains 2 | 1 | ~~2~~ | N.A. | 1, 2, 3 | G 42 |
| b. Steam Gen. Water Level--Low-Low | | | | | | |
| 1. Start Turbine Driven Pump | 3/stm. gen. | 2/stm. gen. any stm. gen. | ~~2/stm. gen.~~ | ≥ 20% of narrow range instrument span | 1, 2, 3 | D 14 |
| 2. Start Motor Driven Pumps | ~~3/stm. gen.~~ | 2/stm. gen. any 2 stm. gen. | ~~2/stm. gen.~~ | ~~≥ 20% of narrow range instrument span~~ | ~~1, 2, 3~~ | ~~14~~ |
| d ~~e.~~ ~~Undervoltage-RCP~~ (Start Turbine Driven Pump) | (3)-1/bus | 2 | ~~2~~ | ≥ ~~71.2% of rated bus voltage~~ 2962 V | 1, 2 | H 14 |

A7 Moved to ITS LCO 3.3.5. Changes to this material are addressed in the markups and DOCs associated with ITS LCO 3.3.5.

A13 LA5 Bases LA3 LA3 Bases LA4 LA2 Bases A5

~~(3) Manual initiation is included in Specification 3.7.1.2~~ A12

3.3.2-1 REQUIRED A5 ~~TA~~BLE ~~3.3-3~~ (Contin~~ued~~) A6 UNIT 2

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTION A4 · LA2 · OR OTHER SPECIFIED CONDITIONS · CONDITION A4

| 6 ~~FUNCTIONAL UNIT~~ | ~~TOTAL NO. OF CHANNELS~~ | CHANNELS TO TRIP | ~~MINIMUM CHANNELS OPERABLE~~ | ALLOWABLE VALUE | APPLICABLE MODES | ~~ACTION~~ |
|---|---|---|---|---|---|---|
| ~~7~~. AUXILIARY FEEDWATER (Continued) | | | | | | |
| C d. ~~Safety Injection~~ (Start All Auxiliary Feedwater Pumps) | See 1 above (all S.I. initiating functions and requirements) | | | | | |
| e. Trip ~~of Main Feedwater Pumps~~ (Start Motor Driven Pumps) | 1/pump | 2 | ~~2~~ | N.A. | 1, 2, ~~3~~ | ~~18~~ I |
| 8. ENGINEERED SAFETY FEATURE INTERLOCKS | | | | | | |
| a. Reactor Trip, P-4 | ~~2~~ 1 per Train, 2 Trains | 1 | ~~2~~ | N.A. | 1, 2, 3 | ~~15~~ F |
| b. Pressurizer Pressure, P-11 | 3 | 2 | ~~2~~ | ≤ 2004 psig | 1, 2, 3 | ~~38~~ K |
| c. Low-Low $T_{avg}$, P-12 | 3 | 2 | ~~2~~ | ≥ 540.5°F | 1, 2, 3 | ~~38~~ K |

BASES · LA4 · L7 · A13 · Bases · LA2 · A5

Insert ITS Function 7 Automatic Switchover to Containment Sump (CTS Function 1.1) A8

TABLE 3.3-3 (Continued)

TABLE NOTATION

L3

(a) Above the P-11 (Pressurizer Pressure) interlock.

(c) Below the P-11 (Pressurizer Pressure) interlock when SI on steam line pressure low is blocked.

A14

~~(1) Trip function may be bypassed in this MODE below P-11.~~

~~(2)~~ Trip function ~~automatically~~ bypassed above ~~P-11, and is bypassed below P-11 when Safety Injection on low steam pressure is not manually bypassed.~~

A15

ITS Cond. C & G

One train inoperable.

ACTION STATEMENTS

Restore train to operable status in 6 hours or

M2

~~ACTION 13 -~~ ~~With the number of OPERABLE channels one less than the Minimum Number of Channels,~~ be in at least HOT STANDBY within 12 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing ~~per Specification 4.3.2.1.1,~~ provided the other channel is operable.

(ITS Cond. G only) In MODE 4 in the following 6 hours. (Applicable to ITS Cond. G instead of COLD SHUTDOWN in the following 30 hours.)

A16

L9

~~ACTION 14~~ With the ~~number~~ of OPERABLE channels one ~~less than the Total Number of Channels, STARTUP and/or~~ POWER OPERATION may proceed ~~provided the following~~ conditions are ~~satisfied:~~

ITS Cond. D & H

(ITS Cond. H) OR be in MODE 3 in 12 hours.

M3

One channel inoperable

A15

~~a.~~ The inoperable channel is placed in the tripped condition within 6 hours.

(ITS Cond. D) OR Be in Mode 3 in 12 hours and be in Mode 4 in 18 hours.

~~b. The minimum channels OPERABLE requirement is met;~~ however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels ~~per Specification 4.3.2.1.1.~~

ITS Cond. E and J

M3

M4

A16

(ITS Cond. E) OR be in Mode 3 in 12 hours and in Mode 4 in 18 hours.

within 6 hours

~~ACTION 15 (This ACTION is not used.)~~

~~ACTION 16 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed provided~~ the inoperable channel is placed in the bypassed condition ~~and the Minimum Channels OPERABLE requirement is met.~~ One additional channel may be bypassed for up to 4 hours for surveillance testing ~~per Specification 4.3.2.1.1.~~

One channel inoperable

A15

M3

A16

(ITS Cond J) OR be in Mode 3 in 12 hours and in Mode 5 in 42 hours

~~ACTION 17 (This ACTION is not used.)~~

or train

~~ACTION 18 - With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement,~~ restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours, and in COLD SHUTDOWN within the following 30 hours.

ITS Cond. B, F, & I

L9

One channel or train inoperable

L9

(ITS Cond. I stops at Hot Standby or Mode 3 and does not require going to Mode 5)

(ITS Cond. F Only) be in MODE 4 in the following 6 hours (applicable for ITS Cond. F instead of COLD SHUTDOWN in the following 30 hours.)

A15

TABLE 3.3-3 (Continued)

ACTION STATEMENTS

ACTION 33 - With the number of OPERABLE Channels one less than the Total Number of Channels, the Emergency Diesel Generator associated with the 4kv Bus shall be declared inoperable and the ACTION Statements for Specifications 3.8.1.1 or 3.8.1.2, as appropriate, shall apply.

ACTION 34 - a. With the number of OPERABLE channels one less than the Minimum Number of Channels, place the inoperable channel in the tripped condition within 1 hour; otherwise, immediately enter the applicable ACTION statement(s) for the associated Emergency Diesel Generator made inoperable by the degraded voltage start instrumentation.

b. With the number of OPERABLE channels two less than the Minimum Number of Channels, restore at least one of the two channels to OPERABLE status and place the other in the tripped condition within 1 hour; otherwise, immediately enter the applicable ACTION statement(s) for the associated Emergency Diesel Generator made inoperable by the degraded voltage start instrumentation.

Actions 33 and 34 are moved to ITS LCO 3.3.5. Changes to this material are addressed in the markups and DOCs associated with ITS LCO 3.3.5.

A7

L8

~~ACTION 36~~ - The block of the automatic actuation logic introduced by a reset of safety injection shall be removed by resetting (closure) of the reactor trip breakers after ~~within one hour of~~ an inadvertent initiation of safety injection providing that all trip input signals have reset due to stable plant conditions. ~~Otherwise, the requirements of ACTION Statement 13 shall have been met.~~

Bases

LA6

When the Automatic Actuation Logic is required OPERABLE and is blocked after an inadvertent SI, the affected train(s) of Automatic Actuation Logic are considered inoperable and the Technical Specification ACTIONS are applicable until the Automatic Actuation Logic is restored to OPERABLE status.

ITS Cond. K

~~ACTION 37~~ M5 ~~(This ACTION is not used)~~

~~ACTION 38~~ - One or more channels inoperable ~~With less than the Minimum Number of Channels OPERABLE,~~ within one hour determine by observation of the associated permissive annunciator window(s) (bistable status lights or computer checks) that the interlock is in its required state for the existing plant condition, or ~~apply Specification 3.0.3.~~ Be in Mode 3 in the next 6 hours and in Mode 4 in the following 6 hours.

LA7 Bases

Unit 1 only for P-4, ITS Cond F

L17 M14

ACTION 41 - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or declare the associated valve inoperable and take the ACTION required by Specification 3.7.1.5.

L2

M6

A15 One train inoperable

ITS Cond. G

TABLE 3.3-3 (Continued)

ACTION STATEMENTS

Restore train to operable status in 6 hours OR

L10

ACTION 42 - ~~With the number of OPERABLE Channels one less than the minimum Channels OPERABLE requirement,~~ be in at least HOT STANDBY within ~~6~~ 12 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing ~~per Specification 4.3.2.1.1~~ provided the other Channel is OPERABLE.

L10 A15 A16

or train

ACTION 45 - ~~With the number of OPERABLE channels one less than the Total Number of Channels,~~ restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours.

ITS Cond. F

One channel or train inoperable

A15

ITS SR 3.3.2.9 Verify ESFAS Response Times are within Limit.

Channel Operational Test (COT), Trip Actuating Device Operational Test TADOT), Actuation Logic Test, Master Relay Test, and Slave Relay Test

DRAFT PAGE FROM UNIT 2 LAR # 181

Changes to Functions are addressed in markup of Table 3.3-3

Changes to Modes are addressed in markup of Table 3.3-3

A19 A18 A17 A17 L11

TABLE 4.3-2

~~ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION~~

SURVEILLANCE REQUIREMENTS

| ~~FUNCTIONAL UNIT~~ | CHANNEL CHECK | CHANNEL CALIBRATION | ~~CHANNEL FUNCTIONAL TEST~~ | ~~MODES IN WHICH SURVEILLANCE REQUIRED~~ |
|---|---|---|---|---|
| ~~1. SAFETY INJECTION AND FEEDWATER ISOLATION~~ | | SR 3.3.2.2, SR 3.3.2.3, SR 3.3.2.6 | SR 3.3.2.7 | |
| ~~a. Manual Initiation~~ | N.A. | N.A. | ~~R~~ | ~~1, 2, 3, 4~~ |
| ~~b. Automatic Actuation Logic and Actuation Relays~~ | N.A. | N.A. | ~~M(1)~~ | ~~1, 2, 3, 4~~ |
| | SR 3.3.2.1 | SR 3.3.2.8 | SR 3.3.2.4 | |
| ~~c. Containment Pressure-High~~ | ~~S~~ | R | Q | ~~1, 2, 3~~ |
| ~~d. Pressurizer Pressure--Low~~ | ~~S~~ | R | Q | 1, 2, 3(a) |
| ~~e. Steam Line Pressure--Low~~ | ~~S~~ | R | Q | 1, 2, 3(a) |
| ~~1.1 SAFETY INJECTION-TRANSFER FROM INJECTION TO THE RECIRCULATION MODE~~ | | | SR 3.3.2.2, SR 3.3.2.3 | |
| ~~a. Automatic Actuation Logic Coincident with Safety Injection Signal~~ | N.A. | N.A. | ~~M(1)~~ | ~~1, 2, 3, 4~~ |
| | | | SR 3.3.2.4 | |
| ~~b. Refueling Water Storage Tank Level-Extreme Low~~ | ~~S~~ | ~~R~~ | ~~Q~~ | ~~1, 2, 3, 4~~ |

(a) Above the P-11 (Pressurizer Pressure) interlock.

Channel Operational Test (COT), Trip Actuating Device Operational Test TADOT), Actuation Logic Test, Master Relay Test, and Slave Relay Test

ITS SR 3.3.2.9 Verify ESFAS Response Times are within Limit.

A19

Changes to Functions are addressed in markup of Table 3.3-3

A17

A18

A17

Changes to Modes are addressed in markup of Table 3.3-3

~~TABLE 4.3-2 (Continued)~~

~~ENGINEERING SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION~~
~~SURVEILLANCE REQUIREMENTS~~

| ~~FUNCTIONAL UNIT~~ | CHANNEL CHECK | CHANNEL CALIBRATION | ~~CHANNEL FUNCTIONAL TEST~~ | ~~MODES IN WHICH SURVEILLANCE REQUIRED~~ |
|---|---|---|---|---|
| ~~2. CONTAINMENT SPRAY~~ | | | | |
| ~~a. Manual Initiation~~ | N.A. | N.A. | ~~R~~ SR 3.3.2.7 | ~~1, 2, 3, 4~~ |
| ~~b. Automatic Actuation Logic, and Actuation Relays~~ | N.A. | N.A. | ~~M(1)~~ SR 3.3.2.2, SR 3.3.2.3, SR 3.3.2.6 | ~~1, 2, 3, 4~~ |
| ~~c. Containment Pressure-High-High~~ | ~~S~~ SR 3.3.2.1 | ~~R~~ SR 3.3.2.8 | ~~Q~~ SR 3.3.2.4 | ~~1, 2, 3~~ |
| ~~3. CONTAINMENT ISOLATION~~ | | | | |
| ~~a. Phase "A" Isolation~~ | | | | |
| ~~1. Manual Initiation~~ | N.A. | N.A. | ~~R~~ SR 3.3.2.7 | ~~1, 2, 3, 4~~ |
| ~~2. Automatic Actuation Logic and Actuation Relays~~ | N.A. | N.A. | ~~M(1)~~ SR 3.3.2.2, SR 3.3.2.3, SR 3.3.2.6 | ~~1, 2, 3, 4~~ |
| ~~3. Safety Injection~~ | See Functional Unit 1 above for all Safety Injection Surveillance Requirements. | | | |
| ~~b. Phase "B" Isolation~~ | | | | |
| ~~1. Manual Initiation~~ | N.A. | N.A. | ~~R~~ SR 3.3.2.7 | ~~1, 2, 3, 4~~ |
| ~~2. Automatic Actuation Logic and Actuation Relays~~ | N.A. | N.A. | ~~M(1)~~ SR 3.3.2.2, SR 3.3.2.3, SR 3.3.2.6 | ~~1, 2, 3, 4~~ |
| ~~3. Containment Pressure--High-High~~ | ~~S~~ SR 3.3.2.1 | ~~R~~ SR 3.3.2.8 | ~~Q~~ SR 3.3.2.4 | ~~1, 2, 3, 4~~ |

Channel Operational Test (COT), Trip Actuating Device Operational Test TADOT), Actuation Logic Test, Master Relay Test, and Slave Relay Test

ITS SR 3.3.2.9 Verify ESFAS Response Times are within Limit.

A19

A18

A17

Changes to Modes are addressed in markup of Table 3.3-3

Changes to Functions are addressed in markup of Table 3.3-3

A17

~~TABLE 4.3-2 (Continued)~~

~~ENGINEERING SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION~~

SURVEILLANCE REQUIREMENTS

L2

L12

| ~~FUNCTIONAL UNIT~~ | CHANNEL CHECK | CHANNEL CALIBRATION | ~~CHANNEL FUNCTIONAL TEST~~ | ~~MODES IN WHICH SURVEILLANCE REQUIRED~~ |
|---|---|---|---|---|
| ~~4. STEAM LINE ISOLATION~~ | | | | |
| ~~a. Manual Initiation~~ | | | | |
| ~~1. Individual~~ | ~~N.A.~~ | ~~N.A.~~ | ~~R~~ | ~~1, 2, 3~~ |
| ~~2. System~~ | N.A. | N.A. | ~~R~~ SR 3.3.2.7 | ~~1, 2, 3~~ |
| ~~b. Automatic Actuation Logic and Actuation Relays~~ | N.A. SR 3.3.2.1 | N.A. SR 3.3.2.8 | ~~M(1)~~ SR 3.3.2.2, SR 3.3.2.3, SR 3.3.2.6 SR 3.3.2.4 | ~~1, 2, 3~~ |
| ~~c. Containment Pressure--Intermediate-High-High~~ | ~~S~~ SR 3.3.2.1 | ~~R~~ SR 3.3.2.8 | ~~Q~~ SR 3.3.2.4 | ~~1, 2, 3~~ |
| ~~d. Steamline Pressure--Low~~ | ~~S~~ SR 3.3.2.1 | ~~R~~ SR 3.3.2.8 | ~~Q~~ SR 3.3.2.4 | 1, 2, 3 (a) |
| ~~e. Steamline Pressure Rate-High Negative~~ | ~~S~~ SR 3.3.2.1 | ~~R~~ SR 3.3.2.8 | ~~Q~~ SR 3.3.2.4 | ~~1, 2,~~ 3 (c) |
| ~~5. TURBINE TRIP AND FEEDWATER ISOLATION~~ | | | | |
| ~~a. Automatic Actuation Logic and Actuation Relays~~ | N.A. SR 3.3.2.1 | N.A. SR 3.3.2.8 | ~~M(1)~~ SR 3.3.2.2, SR 3.3.2.3, SR 3.3.2.6 SR 3.3.2.4 | ~~1, 2, 3~~ |
| ~~b. Steam Generator Water Level--High-High, P-14~~ | ~~S~~ SR 3.3.2.1 | ~~R~~ SR 3.3.2.8 | ~~Q~~ SR 3.3.2.4 | ~~1, 2, 3~~ |
| ~~c. Safety Injection~~ | See Functional Unit 1 above for all Safety Injection Surveillance Requirements. | | | |



(a) Above the P-11 (Pressurizer Pressure) interlock.
(c) Below the P-11 (Pressurizer Pressure) interlock when SI on steam line pressure low is blocked.

ITS SR 3.3.2.9 Verify ESFAS Response Times are within Limit.

Channel Operational Test (COT), Trip Actuating Device Operational Test TADOT), Actuation Logic Test, Master Relay Test, and Slave Relay Test

DRAFT PAGE FROM UNIT 2 LAR # 181

A19

A18

Changes to Functions are addressed in markup of Table 3.3-3

A17

Changes to Modes are addressed in markup of Table 3.3-3

~~TABLE 4.3-2 (Continued)~~

~~ENGINEERING SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS~~

Moved to ITS LCO 3.3.5. Changes to CTS Function 6 are addressed in the markups and DOCs associated with ITS LCO 3.3.5.

A7

A17

| FUNCTIONAL UNIT | CHANNEL CHECK | CHANNEL CALIBRATION | ~~CHANNEL FUNCTIONAL TEST~~ | ~~MODES IN WHICH SURVEILLANCE REQUIRED~~ |
|---|---|---|---|---|
| ~~6. LOSS OF POWER~~ | | | | |
| ~~a. 4.16kv Emergency Bus~~ | | | | |
| ~~1. Undervoltage (Trip Feed)~~ | ~~N.A.~~ | ~~R~~ | ~~Q~~ | ~~1, 2, 3, 4~~ |
| ~~2. Undervoltage (Start Diesel)~~ | ~~N.A.~~ | ~~R~~ | ~~Q~~ | ~~1, 2, 3, 4~~ |
| ~~b. 4.16kv Emergency Bus (Degraded Voltage)~~ | ~~N.A.~~ | ~~R~~ | ~~Q~~ | ~~1, 2, 3, 4~~ |
| ~~c. 480v Emergency Bus (Degraded Voltage)~~ | ~~N.A.~~ | ~~R~~ | ~~Q~~ | ~~1, 2, 3, 4~~ |
| ~~7. AUXILIARY FEEDWATER[(4)]~~ | | | SR 3.3.2.2, SR 3.3.2.3, SR 3.3.2.6 | |
| ~~a. Automatic Actuation Logic and Actuation Relays~~ | N.A. | N.A. | M~~(1)~~ | ~~1, 2, 3~~ |
| ~~b. Steam Generator Water Level-Low-Low~~ | SR 3.3.2.1 | SR 3.3.2.8 | SR 3.3.2.4 | |
| ~~1. Start Turbine Driven Pump~~ | ~~S~~ | ~~R~~ | ~~Q~~ | ~~1, 2, 3~~ |
| ~~2. Start Motor Driven Pumps~~ | ~~S~~ | ~~R~~ | ~~Q~~ | ~~1, 2, 3~~ |

(4) Manual initiation is included in Specification 3.7.1.2.

LA3

ITS SR 3.3.2.9 Verify ESFAS Response Times are within Limit.

A19

Channel Operational Test (COT), Trip Actuating Device Operational Test TADOT), Actuation Logic Test, Master Relay Test, and Slave Relay Test

DRAFT PAGE FROM UNIT 2 LAR # 181

Changes to Functions are addressed in markup of Table 3.3-3

A17

~~ENGINEERING SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS~~

A18

Changes to Modes are addressed in markup of Table 3.3-3

A17

| FUNCTIONAL UNIT | CHANNEL CHECK | CHANNEL CALIBRATION | ~~CHANNEL FUNCTIONAL TEST~~ | ~~MODES IN WHICH SURVEILLANCE REQUIRED~~ |
|---|---|---|---|---|
| 7. AUXILIARY FEEDWATER (continued) | L15 | SR 3.3.2.8 | SR 3.3.2.5 | |
| c. Undervoltage - RCP (Start Turbine-Driven Pump) | ~~S~~ | ~~R~~ | ~~Q~~ L14 | 1, 2 |
| d. Safety Injection (Start All Auxiliary Feedwater Pumps) | See 1 above (all SI surveillance requirements) | | | |
| | | | SR 3.3.2.7 | |
| e Trip of Main Feedwater Pumps (Start Motor-Driven Pumps) | N.A. M15 | N.A. | ~~R~~ | 1, 2, 3 |
| 8. ENGINEERED SAFETY FEATURE INTERLOCKS | SR 3.3.2.1 | | SR 3.3.2.7 | |
| a. Reactor Trip, P-4 | N.A. | N.A. | ~~R~~ | 1, 2, 3 |
| b. Pressurizer Pressure, P-11 | ~~N.A.~~ | ~~R~~ | ~~Q~~ | 1, 2, 3 |
| c. Low-Low $T_{avg}$, P-12 | ~~N.A.~~ | ~~R~~ | ~~Q~~ | 1, 2, 3 |
| | | SR 3.3.2.8 | SR 3.3.2.4 | |

~~TABLE 4.3-2 (Continued)~~

~~TABLE NOTATION~~

~~(1)~~ Each train or logic channel shall be tested ~~at least every other 31 days.~~

31 days on a STAGGERED TEST BASIS.

A20

Frequency of SR 3.3.2.2, Actuation Logic Test and SR 3.3.2.3 Master Relay Test.

## UNIT 1 PAGES

A1

INSTRUMENTATION

3/4.3.2 ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2.1 The Engineered Safety Feature Actuation System instrumentation channels and interlocks shown in Table 3.3-3 shall be OPERABLE.

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

Changes to this Unit 1 material are addressed in the Unit 2 markup.

With an Engineered Safety Feature Actuation System instrumentation channel[1] or interlock inoperable, take the ACTION shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

M8

as applicable

and interlock and the automatic actuation logic including master and slave relays

~~4.3.2.1.1~~ Each Engineered Safety Feature Actuation System instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations ~~during the modes and at the frequencies~~ shown in Table 4.3-2

except for the Slave Relay Test which shall be performed once per 18 months.

4.3.2.1.2 The logic for the interlocks shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of channels affected by interlock operation. The total interlock function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by interlock operation.

Changes to this Unit 1 material are addressed in the Unit 2 markup and/or DOCs.

4.3.2.1.3 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESF function shall be demonstrated to be within the limit at least once per 18 months. Each test shall include at least one logic train such that both logic trains are tested at least once per 36 months and one channel per function such that all channels are tested at least once per N times 18 months where N is the total number of redundant channels in a specific ESF function as shown in the "Total No. of Channels" Column of Table 3.3-3.

Moved to SR 3.3.2.6 and assigned to the applicable Actuation Relay Functions on CTS Table 4.3-2 and ITS Table 3.3.2-1 (see Unit 2 CTS Table 4.3-2 markup for details)

(1) Separate ACTION statement entry is allowed for each Function.



Surveillance requirements for each individual ESFAS instrument Function are shown on ISTS Table 3.3.2-1. See Unit 2 markup and DOC for replacing general surveillance 4.3.2.1.1 with the more specific requirements on ISTS Table 3.3.2-1.

DRAFT PAGE FROM LAR # 317/190 and 302/173

M9 — and Actuation Relays

A6 — Unit 1

TABLE 3.3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

| FUNCTIONAL UNIT | TOTAL NO. OF CHANNELS | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | ALLOWABLE VALUE | APPLICABLE MODES | ACTION |
|---|---|---|---|---|---|---|
| 1. SAFETY INJECTION AND FEEDWATER ISOLATION | | | | | | |
| a. Manual Initiation | 2 | 1 | 2 | Not Applicable | 1, 2, 3, 4 | 18 |
| b. Automatic Actuation Logic | 2 | 1 | 2 | Not Applicable | 1, 2, 3, 4 | 13, 36 |
| c. Containment Pressure-High | 3 | 2 | 2 | ≤ 5.33 psig | 1, 2, 3 | 14 |
| d. Pressurizer Pressure-Low | 3 | 2 | 2 | ≥ 1841 psig | 1, 2, $3^{(1)}$ | 14 |
| e. Steamline Pressure-Low | 3/loop | 2/loop any loop | 2/loop any loop | ≥ 495.8 psig ~~steam line pressure*~~ | 1, 2, $3^{(1)}$ | 14 |

A21

Changes to this Unit 1 material are addressed in the Unit 2 markup.

* Time constants utilized in the lead-lag controllers for Steam line Pressure-Low are $\tau_1 \geq 50$ seconds and $\tau_2 \leq 5$ seconds. CHANNEL CALIBRATION shall ensure that these time constants are adjusted to these values.

Note in Channel Calibration SR. — A9

Changes to this Unit 1 material are addressed in the Unit 2 markup.

Unit 1

A6

**DRAFT PAGE FROM LAR # 317/190**

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

| FUNCTIONAL UNIT | TOTAL NO. OF CHANNELS | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | ALLOWABLE VALUE | APPLICABLE MODES | ACTION |
|---|---|---|---|---|---|---|
| 1.1 SAFETY INJECTION-TRANSFER FROM INJECTION TO THE RE-CIRCULATION MODE | | | | | | |
| ~~a. Manual Initiation~~ | ~~2 sets 2 switches/set~~ | ~~1 set~~ | ~~2 sets~~ | ~~Not Applicable~~ | ~~1, 2, 3, 4~~ | ~~18~~ |
| ~~b. Automatic Actuation Logic Coincident with Safety Injection Signal~~ | ~~2~~ | ~~1~~ | ~~2~~ | Not Applicable | 1, 2, 3 4 | ~~18~~ |
| ~~c.~~ Refueling Water Storage Tank Level-Low (Unit 1) | 4 | 2 | 3 | ≥ 13' 9" and ≤ 14' 4" | 1, 2, 3 4 | ~~16~~ |

L13

A8

M10

Changes to this Unit 1 material are addressed in the Unit 2 markup.

Changes to this Unit 1 material are addressed in the Unit 2 markup.

Unit 1

A6

DRAFT PAGE FROM
LAR # 317/190

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

| FUNCTIONAL UNIT | TOTAL NO. OF CHANNELS | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | ALLOWABLE VALUE | APPLICABLE MODES | ACTION |
|---|---|---|---|---|---|---|
| 2. CONTAINMENT SPRAY | | | | | | |
| a. Manual | 2 sets | 1 set 2 switches | 2 sets | Not Applicable | 1, 2, 3, 4 | 18 |
| b. Automatic Actuation Logic | 2 | 1 | 2 | Not Applicable | 1, 2, 3, 4 | 13 |
| c. Containment Pressure--High-High | 4 | 2 | 3 | ≤ 11.43 psig | 1, 2, 3 | 16 |
| 3. CONTAINMENT ISOLATION | | | | | | |
| a. Phase "A" Isolation | | | | | | |
| 1) Manual | 2 | 1 | 2 | Not Applicable | 1, 2, 3, 4 | 18 |
| 2) From Safety Injection Automatic Actuation Logic | 2 | 1 | 2 | Not Applicable | 1, 2, 3, 4 | 13 |
| b. Phase "B" Isolation | | | | | | |
| 1) Manual | 2 sets (2 switches/set) | 1 set | 2 sets | Not Applicable | 1, 2, 3, 4 | 18 |
| 2) Automatic Actuation Logic | 2 | 1 | 2 | Not Applicable | 1, 2, 3, 4 | 13 |
| 3) Containment Pressure--High-High | 4 | 2 | 3 | ≤ 11.43 psig | 1, 2, 3 | 16 |

and Actuation Relays

M9

Changes to this Unit 1 material are addressed in the Unit 2 markup.

Changes to this Unit 1 material are addressed in the Unit 2 markup.

Unit 1

A6

DRAFT PAGE FROM LAR # 317/190 and 302/173

TABLE 3.3-3 (Continued)

and Actuation Relays

M9

~~ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION~~

| FUNCTIONAL UNIT | TOTAL NO. OF CHANNELS | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | ALLOWABLE VALUE | APPLICABLE MODES | ACTION |
|---|---|---|---|---|---|---|
| 4. STEAM LINE ISOLATION | | | | | | |
| ~~a. Manual~~ | ~~2/steam line~~ | ~~1/steam line~~ | ~~2/operating steam line~~ | ~~Not Applicable~~ | ~~1, 2, 3~~ | ~~18~~ |
| b. Automatic Actuation Logic | 2 | 1 | 2 | Not Applicable | 1, 2, 3 | 13 |
| c. Containment Pressure Intermediate-High-High | 3 | 2 | 2 | ≤ 7.33 psig | 1, 2, 3 | 14 |
| d. Steamline Pressure-Low | 3/loop | 2/loop any loop | 2/loop any loop | ≥ 495.8 psig ~~steam line pressure*~~ | 1, 2, $3^{(1)}$ | 14 |
| e. Steamline Pressure Rate-High Negative | 3/loop | 2/loop any loop | 2/operating loop | ≤ 104.2 psi with a time constant ≥ 50 seconds | $3^{(2)}$ | 14 |
| 5. TURBINE TRIP & FEEDWATER ISOLATION | | | | | | |
| a. Steam Generator Water Level--High-High, P-14 | 3/loop | 2 loop in any operating loop | 2/loop in each operating loop | ≤ 90.2% of narrow range instrument span each steam generator | 1, 2, 3 | 14 |
| a. Automatic Actuation Logic and Actuation Relays | 2 Trains | | | NA | 1, 2, 3 | G |
| c. Safety Injection | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. | | | | | |

L2

A21

b

M11

* Time constants utilized in the lead-lag controllers for Steam line Pressure-Low are $\tau_1 \geq 50$ seconds and $\tau_2 \leq 5$ seconds. CHANNEL CALIBRATION shall ensure that these time constants are adjusted to these values.

Note in Channel Calibration SR.

A9

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

Moved to ITS LCO 3.3.5. Changes to CTS Function 6 are addressed in the markups and DOCs associated with ITS LCO 3.3.5.

A7

| FUNCTIONAL UNIT | TOTAL NO. OF CHANNELS | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | ALLOWABLE VALUE | APPLICABLE MODES | ACTION |
|---|---|---|---|---|---|---|
| 6. LOSS OF POWER | | | | | | |
| a. 4.16kv Emergency Bus Undervoltage | | | | | | |
| 1. Loss of Voltage (Trip Feed) | 1/4.16kv Bus | 1/4.16kv Bus | 1/4kv Bus | ≥ 71.2% of rated bus voltage with a 1 ± 0.1 second time delay | 1, 2, 3, 4 | 33 |
| 2. Loss of Voltage (Start Diesel) | 1/4.16kv Bus | 1/4.16kv Bus | 1/4kv Bus | ≥ 71.2% of rated bus voltage with a < 0.9 second time delay (includes auxiliary relay times) | 1, 2, 3, 4 | 33 |
| b. 4.16kv Emergency Bus Undervoltage (Degraded Voltage) | 2/4.16kv Bus | 2/Bus | 2/Bus | ≥ 93.4% of rated bus voltage with a 90 ± 5 second time delay | 1, 2, 3, 4 | 34 |
| c. 480 volt Emergency Bus Undervoltage (Degraded Voltage) | 2/480v Bus | 2/Bus | 2/Bus | ≥ 93.4% of rated bus voltage with a 90 ± 5 second time delay | 1, 2, 3, 4 | 34 |

Unit 1 A6 DRAFT PAGE FROM UNIT 1 LAR # 302

| | | | | | |
|---|---|---|---|---|---|
| Automatic Actuation Logic and Actuation Relays | 2 Trains | | NA | 1, 2, 3 | G |

M12

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

| FUNCTIONAL UNIT | TOTAL NO. OF CHANNELS | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | ALLOWABLE VALUE | APPLICABLE MODES | ACTION |
|---|---|---|---|---|---|---|
| 7. AUXILIARY FEEDWATER | | | | | | |
| a. Steam Gen. Water Level-~~Low-Low~~ (~~Loop Stop Valves Open~~) | | | | | | |
| i. Start Turbine Driven Pump | 3/stm. gen. | 2/stm. gen. any stm. gen. | 2/stm. gen. | ≥ 19.1% of narrow range instrument span each steam generator | 1, 2, 3 | 14 |
| ii. Start Motor Driven Pumps | ~~3/stm. gen.~~ any 2 stm. gen. | 2/stm. gen. any 2 stm. gen. | 2/stm. gen. | ≥ 19.1% of narrow range instrument span each steam generator | 1, 2, 3 | 14 |
| b. Undervoltage-RCP (Start Turbine Driven Pump) | (3)-1/bus | 2 | 2 | ≥ ~~71.2% rated RCP bus voltage~~ 2962V | 1 ,2 | 14 |
| c. S.I. (Start All Auxiliary Feedwater Pumps) | See 1 above (all S.I. initiating functions and requirements) | | | | | |
| d. (Deleted) | | | | | | |
| e. Trip of Main Feedwater Pumps (Start Motor Driven Pumps) | 1/pump | 1 | 1 | Not Applicable | 1, 2, 3 | 18 |

A22 LA2 Bases M13

Changes to this Unit 1 material are addressed in the Unit 2 markup.

Unit 1

A6

L17

M14

ITS Cond. F

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

| FUNCTIONAL UNIT | TOTAL NO. OF CHANNELS | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | ALLOWABLE VALUE | APPLICABLE MODES | ACTION |
|---|---|---|---|---|---|---|
| 8. ESF INTERLOCKS | | | | | | |
| a. Reactor Trip, P-4 | 2 | 1 | 2 | Not Applicable | 1, 2, 3 | ~~38~~ |
| b. Pressurizer Pressure, P-11 | 3 | 2 | 2 | ≤ 2004 psig | 1, 2, 3 | 38 |
| c. Low-Low Tavg, P-12 | 3 | 2 | 2 | ≥ 540.5°F | 1, 2, 3 | 38 |

Changes to this Unit 1 material are addressed in the Unit 2 markup.

Changes to this Unit 1 material are addressed in the Unit 2 markup.

TABLE 4.3-2

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

| FUNCTIONAL UNIT | CHANNEL CHECK | CHANNEL CALIBRATION | CHANNEL FUNCTIONAL TEST | MODES IN WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|
| 1. SAFETY INJECTION AND FEEDWATER ISOLATION | | | | |
| a. Manual Initiation | N.A. | N.A. | R | 1, 2, 3, 4 |
| b. Automatic Actuation Logic and Actuation Relays | N.A. | N.A. | M(1) | 1, 2, 3, 4 |
| c. Containment Pressure-High | S | R | Q | 1, 2, 3 |
| d. Pressurizer Pressure--Low | S | R | Q | 1, 2, 3 |
| e. Steam Line Pressure--Low | S | R | Q | 1, 2, 3 |

M9

Changes to this Unit 1 material are addressed in the Unit 2 markup.

Changes to this Unit 1 material are addressed in the Unit 2 markup.

DRAFT PAGE FROM UNIT 1 LAR #s 309 & 317

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

| FUNCTIONAL UNIT | CHANNEL CHECK | CHANNEL CALIBRATION | CHANNEL FUNCTIONAL TEST | MODES IN WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|
| 1.1 SAFETY INJECTION-TRANSFER FROM INJECTION TO THE RECIRCULATION MODE | | | | |
| a. Manual Initiation | N.A. | N.A. | R | 1, 2, 3, 4 |
| b. Automatic Actuation Logic Coincident with Safety Injection Signal | N.A. | N.A. | $M^{(1)}$ | 1, 2, 3 |
| c. Refueling Water Storage Tank Level-Low | S | R | Q | 1, 2, 3 |
| 2. CONTAINMENT SPRAY | | | | |
| a. Manual Initiation | N.A. | N.A. | R | 1, 2, 3, 4 |
| b. Automatic Actuation Logic | N.A. | N.A. | $M^{(1)}$ | 1, 2, 3, 4 |
| c. Containment Pressure-High-High | S | R | Q | 1, 2, 3 |

L13

M10 ,4

M9 and Actuation Relays

Changes to this Unit 1 material are addressed in the Unit 2 markup.

Changes to this Unit 1 material are addressed in the Unit 2 markup.

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| FUNCTIONAL UNIT | CHANNEL CHECK | CHANNEL CALIBRATION | CHANNEL FUNCTIONAL TEST | MODES IN WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|
| 3. CONTAINMENT ISOLATION | | | | |
| a. Phase "A" Isolation | | | | |
| 1) Manual | N.A. | N.A. | R | 1, 2, 3, 4 |
| 2) From Safety Injection Automatic Actuation Logic | N.A. | N.A. | M(1) | 1, 2, 3, 4 |
| b. Phase "B" Isolation | | | | |
| 1) Manual | N.A. | N.A. | R | 1, 2, 3, 4 |
| 2) Automatic Actuation Logic | N.A. | N.A. | M(1) | 1, 2, 3, 4 |
| 3) Containment Pressure--High-High | S | R | Q | 1, 2, 3 |

M9

and Actuation Relays

Changes to this Unit 1 material are addressed in the Unit 2 markup.

DRAFT PAGE FROM UNIT 1 LAR # 309

Changes to this Unit 1 material are addressed in the Unit 2 markup.

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

L2

| FUNCTIONAL UNIT | CHANNEL CHECK | CHANNEL CALIBRATION | CHANNEL FUNCTIONAL TEST | MODES IN WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|
| 4. STEAM LINE ISOLATION | | | | |
| a. ~~Manual~~ | ~~N.A.~~ | ~~N.A.~~ | ~~R~~ | ~~1, 2, 3~~ |
| b. Automatic Actuation Logic and Actuation Relays | N.A. | N.A. | M(1) | 1, 2, 3 |
| c. Containment Pressure--Intermediate-High-High | S | R | Q | 1, 2, 3 |
| d. Steamline Pressure--Low | S | R | Q | 1, 2, 3 |
| e. Steamline Pressure Rate-High Negative | S | R | Q | 1, 2, 3 |
| 5. TURBINE TRIP & FEEDWATER ISOLATION | | | | |
| a. Steam Generator Water Level--High-High | S | R | Q | 1, 2, 3 |
| 6. LOSS OF POWER | | | | |
| a. 4.16kv Emergency Bus Under-voltage (Loss of Voltage) Trip Feed & Start Diesel | N.A. | R | Q | 1, 2, 3, 4 |
| b. 4.16kv and 480v Emergency Bus Undervoltage (Degraded Voltage) | N.A. | R | Q | 1, 2, 3, 4 |

M9

A7

Moved to ITS LCO 3.3.5. Changes to CTS Function 6 are addressed in the markups and DOCs associated with ITS LCO 3.3.5.

M11

Automatic Actuation Logic and Actuation Relays and Safety Injection



Changes to this Unit 1 material are addressed in the Unit 2 markup.

Changes to this Unit 1 material are addressed in the Unit 2 markup.

DRAFT PAGE FROM UNIT 1 LAR # 309

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

Automatic Actuation Logic and Actuation Relays

M12

| FUNCTIONAL UNIT | CHANNEL CHECK | CHANNEL CALIBRATION | CHANNEL FUNCTIONAL TEST | MODES IN WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|
| 7. AUXILIARY FEEDWATER | | | | |
| a. Steam Generator Water Level-Low-Low | S | R | Q | 1, 2, 3 |
| b. Undervoltage-RCP | S | R | Q | 1, 2 |
| c. S.I. | See 1 above (all SI surveillance requirements) | | | |
| d. (Deleted) | | | | |
| e. Trip of Main Feedwater Pumps | N.A. | N.A. | R | 1, 2, 3 |
| 8. ESF INTERLOCKS | | | | |
| a. P-4 | N.A. | N.A. | R | 1, 2, 3 |
| b. P-11 | N.A. | R | Q | 1, 2, 3 |
| c. P-12 | N.A. | R | Q | 1, 2, 3 |

Changes to this Unit 1 material are addressed in the Unit 2 markup.

# 3.3C

# ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

# DISCUSSION OF CHANGES

# CTS 3.3.2.1 Engineered Safety Feature Actuation System (ESFAS) Instrumentation

## ITS 3.3.2 Engineered Safety Feature Actuation System Instrumentation

DISCUSSION OF CHANGE (DOC)

***Less Restrictive Changes (L)***

L.1 *(Category 7 - Relaxation of Surveillance Frequency)* CTS surveillance 4.3.2.1.3 specifies the response time testing requirements for the ESFAS Functions. The corresponding ISTS SR 3.3.2.10 contains a note that provides an allowance for verifying the response time of the turbine-driven AFW pump. The ISTS allowance provides a time delay applicable during plant startups and that is based on reaching the required steam pressure for operating the turbine pump. The CTS ESFAS response time surveillance is revised to incorporate the allowance provided by the ISTS note. The proposed change modifies the ISTS allowance consistent with the steam pressure provisions of a similar allowance that exists in CTS Section 3.7 for testing the turbine-driven AFW pump. This changes the CTS by providing a delay time for testing the AFW pump to allow for the necessary plant condition (steam pressure) to ensure proper turbine operation. In addition, the proposed change makes the ESFAS response time test requirement for the turbine-driven AFW pump consistent with the CTS test requirements for this pump in Section 3.7 of the CTS.

The response time test definition includes the time it takes for a pump to reach its required discharge pressure. The proposed change would delay the performance of the surveillance requirement during a plant startup until the required plant condition (steam pressure) was reached. In order to verify the time it takes to reach the required pump discharge pressure, the turbine must be tested at ≥ the minimum required (design) steam pressure. Testing at less steam pressure may result in an inaccurate measurement or failure to reach the required pump discharge pressure. The proposed change is acceptable because it is necessary to ensure that the response time of the pump can be accurately measured, if required, during a plant startup. As such the proposed change serves to more closely define the required test condition such that the response time may be accurately verified if the test is performed during a plant startup. The proposed change provides a relatively short delay (limited to 24 hours after reaching the specified steam pressure) that is consistent with the current practice for verifying the turbine-driven AFW pump performance quarterly as specified in Section 3.7 of the CTS. Considering the relatively short delay provided by the ISTS note and the fact that the allowance is only necessary when the test is preformed during a plant startup and that the required steam pressure is necessary for an accurate test, the proposed change does not adversely affect the safe operation of the plant. In addition, the proposed change provides additional assurance that the response time of the AFW pump (an assumption of the safety analyses) is properly verified. The proposed change is designated less restrictive because less stringent surveillance requirements are applied in the ITS than in the CTS.

L.2 *(Category 1, 4, and 5 - Relaxation of LCO Requirements, Relaxation of Required Action, and Deletion of Surveillance Requirement)* The Unit 1 and 2 CTS ESFAS requirements for steamline isolation include the manual switches for the individual main steam isolation valves. The Unit 2 ESFAS requirements also include the system level steam line isolation manual initiation switches. The ISTS only requires a single manual initiation feature for steam line isolation. The CTS requirements are revised to be more consistent with the ISTS requirements and the BVPS Unit 1 and 2 ESFAS design. This changes the Unit 1 and 2 CTS by eliminating the individual main steam isolation valve control switches from the ESFAS Instrumentation TS. The proposed change includes the elimination of the LCO, Action, and Surveillance requirements associated with this instrumentation.

The ISTS Bases for the manual steam line isolation Function describes the manual Function as closing all the isolation valves by using either one of two switches. The ISTS requirements as described in the Bases address a system level (Train A or B) ESFAS steamline isolation actuation. The ISTS ESFAS requirements are not intended to address the individual main steam isolation valve hand switches. Individual component hand switches are not part of the ESFAS instrumentation or circuitry. Only BVPS Unit 2 has an ESFAS train oriented manual initiation capability for steam line isolation. The Unit 2 system level manual steam line isolation utilizes the ESFAS actuation trains to isolate all steam lines at the same time. The Unit 2 system level manual initiation function operates in a similar manner as described in the ISTS Bases. The remaining Unit 1 and Unit 2 manual initiation requirements in the CTS for ESFAS address the individual isolation valve controls which are not part of the ESFAS Instrumentation. Therefore, the proposed change eliminates the CTS ESFAS requirements for the manual initiation of individual isolation valves. The proposed change is acceptable because the safety analyses that rely on the ESFAS steam line isolation Function do not assume manual actuation. The accident analyses depend on the automatic actuation provided by the containment pressure and steam line pressure instrumentation that are required operable by the ESFAS TS. Manual isolation of the steam lines would not provide a safety function equivalent to the automatic isolation assumed safety analyses. However, the Unit 2 system level manual actuation is part of the ESFAS circuitry and is retained in the TS as backup instrumentation consistent with the content of the ISTS. In addition, the main steam isolation valves are addressed in a separate TS that controls the operability of the individual main steam isolation valves. The individual manual controls for the main steam isolation valves are directly associated with the operability of the individual valves and not the ESFAS Instrumentation. Therefore, similar to many other component based TS, the operability of the controls associated with the individual component is assessed under the requirements of the component TS and not the ESFAS TS. The proposed change is designated less restrictive because less stringent requirements are applied in the ITS ESFAS than in the CTS ESFAS.

L.3 *(Category 2 - Relaxation of Applicability)* CTS table 3.3-3 Note (1) states that the "trip function may be bypassed in this MODE below P-11." The CTS Note is used to modify the Mode 3 Applicability for certain ESFAS Functions associated with the P-11 interlock. The corresponding ISTS Note (a) states; "Above the P-11 (Pressurizer Pressure) interlock. The ISTS Note is also used to modify the Mode 3 Applicability of ESFAS Functions associated with the P-11 interlock. The CTS is revised to conform to the ISTS. This changes the CTS by relaxing the Applicability such that the ESFAS Functions are only required operable in Mode 3 above the P-11 interlock.

The CTS Note (1) allows the applicable ESFAS Functions to be manually bypassed below the P-11 interlock. The CTS allowance to bypass the ESFAS Functions below the P-11 interlock is in recognition that the affected Functions are not required to mitigate the consequences of events initiated at lower Pressurizer pressures in Mode 3. Below the P-11 interlock the applicable safety analyses do not assume the affected ESFAS Functions are operable and therefore those Functions may be bypassed. Below the P-11 interlock, other ESFAS Functions (that are required to be operable below P-11) provide the required protection.

The ISTS version of CTS Note (1) more directly specifies the affected ESFAS Function operability in Mode 3 by stating it is only required (operable) above P-11. The ISTS Note is consistent with the intent of the CTS Note which indirectly specifies the same operability requirement by allowing the affected trip Functions to be bypassed below the P-11 interlock. However, the ISTS Note goes further than simply allowing the affected ESFAS Function to be bypassed. The ISTS note clearly identifies that the affected ESFAS Functions are not required operable below P-11. Conformance with the ISTS note is acceptable because it is consistent with the applicable safety analyses assumptions regarding the availability of the affected ESFAS Functions. The BVPS safety analyses do not assume the operation of the affected ESFAS Functions to mitigate a design basis accident that initiates below P-11. In addition, the proposed change is consistent with the intent of the corresponding CTS Note (1) which allowed the affected ESFAS Functions to be bypassed (defeated) below P-11. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.4 *(Category 2 Relaxation of Applicability)* Unit 2 only. The CTS Phase B containment isolation Function consists of an automatic isolation on containment pressure high-high. The applicable Modes for which the CTS containment pressure high-high Function is required operable are Modes 1-4. The corresponding ISTS phase B isolation on containment pressure High-High is required operable in Modes 1-3. The corresponding BVPS Unit 1 Function is also required operable in Modes 1-3. The Unit 2 BVPS phase B isolation on containment pressure is revised to conform to the ISTS and Unit 1 Applicable Modes. This changes the Unit 2 CTS by eliminating the requirement to maintain this ESFAS Function Operable in Mode 4.

The TS require automatic phase B isolation on high containment pressure when the potential stored energy in the primary and secondary systems is great enough that a high energy line break would quickly pressurize the containment to the pressure limit (approximately 20 psig). In Modes 1, 2, and 3 the primary and secondary systems may be at full operating pressure and temperature. Therefore, in these Modes a high energy line break may pressurize the containment quickly enough to require automatic phase B containment isolation. As stated in the ISTS Bases for this Function, in lower operating modes (Modes 4, 5, and 6) the stored energy in the primary and secondary systems is reduced due to the lower operating temperatures and pressures in these Modes. In Mode 4, plant operation transitions to RHR cooling and primary system pressure is significantly reduced (RHR relief valves are set at approximately 450 psig). However, in Mode 4, sufficient stored energy may be present to pressurize the containment but not quickly enough to require an automatic isolation feature. As stated in the ISTS Bases, in Mode 4 sufficient time exists for manual action to isolate containment. Therefore, in Mode 4, the manual containment Phase B isolation Function is required operable.

The proposed change is acceptable because due to the pressure and temperature limitations of Mode 4 operation the automatic containment Phase B isolation is not required to ensure containment isolation. Consistent with the requirements of BVPS Unit 1 and the ISTS, the manual actuation feature is required operable in Mode 4 and continues to provide sufficient assurance that the containment can be isolated if necessary in this Mode. In addition, the elimination of the Mode 4 requirement for this ESFAS Function makes it consistent with the other CTS and ISTS containment pressure Functions associated with containment spray and SI which also do not required automatic initiation on containment pressure in Mode 4. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.5 *(Category 2 Relaxation of Applicability)* The CTS ESFAS requirements specify that the steam line isolation actuation Functions be operable in Modes 1, 2, and 3. The corresponding ISTS requirements for the steam line isolation Functions contain an exception to the requirement for these Functions to be operable in Modes 2 and 3. The ISTS exception is in the form of a note (ITS Note b) that states "except when all MSIVs are closed and deactivated." The CTS steam line isolation Function requirements are revised to conform to the ISTS. This changes the CTS by providing an exception to the operability requirements for the steam line isolation Functions in Modes 2 and 3.

The steam line isolation Functions actuate the MSIVs to the closed position when required. However, in Modes 2 and 3 plant operation is possible with the MSIVs closed. The proposed change is acceptable because when all the MSIVs are closed the steam line isolation safety function is accomplished and the actuation instrumentation is not required to perform this task. Therefore, under these circumstances the associated ESFAS instrumentation is no longer required operable to assure the safe operation of the plant. In addition, the proposed change includes the precaution that the MSIVs must be deactivated in the closed position which prevents re-opening the valves by single manual action prior to the required ESFAS isolation instrumentation being operable. Therefore, the proposed change continues to provide assurance the steam line isolation Function is either operable or the affected valves are in the required isolation position. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.6 *(Category 2 Relaxation of Applicability)* The CTS Turbine Trip and Feedwater Isolation ESFAS Functions are required operable in Modes 1, 2, and 3. The CTS does not provide any exceptions. The corresponding ISTS requirements contain exceptions to the Mode 2 and 3 operability requirements. The ISTS does not require the Turbine Trip and Feedwater Isolation Function to be operable if all the Feedwater lines are isolated. The CTS is revised to be more consistent with the ISTS. This changes the CTS by providing an exception to the operability requirements for this ESFAS Function in Modes 2 and 3.

The Turbine Trip and Feedwater Isolation Function provides protection against SG overfill which can result in carryover (turbine damage) or excessive primary plant cooldown. As stated in the ISTS Bases, the Feedwater Isolation Function is necessary when the Main Feedwater lines are used to feed the SG. In Modes 2 and 3, feedwater for the SGs may be supplied by the auxiliary feedwater system and the main feedwater system may be isolated. In this case, the ESFAS Function for Main Feedwater isolation is not required as the main feedwater lines are already isolated. Therefore, the instrumentation required for automatic isolation is not required to perform this ESFAS Function. The proposed change is acceptable because it provides an exception to the operability requirements for the Turbine Trip and Feedwater Isolation instrumentation when the primary function performed by that instrumentation (isolation of the main feedwater lines) is already accomplished. As such, the proposed change does not adversely impact the safe operation of the plant and continues to assure that either the automatic isolation instrumentation is operable or that the primary safety function of that instrumentation is accomplished. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.7 *(Category 2 Relaxation of Applicability)* The CTS requires the ESFAS AFW pump start on trip of all main feedwater pumps Function to be operable in Modes 1, 2, and 3. The corresponding ISTS AFW start Function is required operable in Modes 1 and 2. The CTS Applicability for this Function is revised to conform to the ISTS. This changes the CTS by eliminating the requirement for the automatic AFW pump start on trip of all main feedwater pumps to be operable in Mode 3.

The purpose of the AFW automatic start Function is to ensure the SGs retain sufficient water to remain a viable heat sink when normal feedwater is be lost. Several different automatic AFW starts are required operable by the ESFAS TS including a start on low SG water level. The CTS requires the AFW pump start on trip of all main feedwater pumps to be operable in Mode 3. The ISTS does not. In Mode 3 operation, the plant may or may not be using the main feedwater pumps to maintain SG levels. In this Mode, the feedwater required to maintain the SG level is greatly reduced and the AFW pumps may be used. Therefore, in Mode 3, the fact that the main feedwater pumps are tripped is not necessarily a reliable indication of a loss of all feedwater. In addition, due to the extremely low or non-existent steam demand on the SGs in Mode 3, the SG level will not decrease as rapidly upon a loss of feedwater as it would in Mode 1. Therefore, upon a loss of main feedwater in Mode 3, sufficient time would be available to manually start an AFW pump if necessary. If for some reason an AFW pump was not started upon a loss of main feedwater, the SG low level automatic start of the AFW pumps (required operable in Mode 3) would eventually actuate to provide the required feedwater and maintain the SG heat sink. Therefore, considering the plant conditions (main feedwater pumps may not be operating), the relatively slow change expected in SG levels in Mode 3, and the fact that the SG low level automatic start of the AFW pumps would provide the required feedwater, an automatic AFW start upon loss of the main feedwater pumps is overly conservative and not necessary to ensure the SGs remain capable of removing decay heat. Based on the discussions above, the proposed change is acceptable. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.8 *(Category 3 - Relaxation of Completion Time and Category 4 - Relaxation of Required Action)* The CTS contains an Action (#36) for inoperable SI Automatic Actuation Logic that states "The block of the automatic actuation logic introduced by a reset of safety injection shall be removed by resetting (closure) of the reactor trip breakers within one hour of an inadvertent initiation of safety injection providing that all trip input signals have reset due to stable plant conditions. Otherwise, the requirements of ACTION Statement 13 shall have been met." The ISTS does not contain a corresponding Action requirement. The CTS is revised to conform more closely to the ISTS by revising the CTS Action to delete the one hour Completion Time requirement and move the Action into the Bases description for the SI Automatic Actuation Logic. This changes the CTS by eliminating a separate Completion Time and Action for the described condition. The movement of this information to the Bases is addressed in another LA type DOC. This DOC is intended to address the elimination of the CTS Completion Time and Action.

The CTS Action provides a description of one way the actuation logic may become inoperable (after an inadvertent SI initiation) and provides a separate completion time to restore the Actuation Logic to operable status. The CTS Action is not part of the previous Westinghouse Plant Standard TS in NUREG-0452 or the ISTS in NUREG-1431. The BVPS SI Actuation logic is a standard Westinghouse design for which the standard TS should be applicable. The Westinghouse RTB interlock (P-4) that prevents reset of the SI automatic actuation logic is clearly explained in the ISTS Bases describing the P-4 interlock, including the fact that the RTBs must be reset to enable the SI actuation logic. The unique CTS Action was added to address and more clearly explain this standard Westinghouse design feature that blocks further SI actuation once SI has been initiated. However, the existing TS Actions in the CTS and the ISTS are sufficient to address Actuation Logic that becomes inoperable for any reason. Actuation logic may be inoperable for a failed component or a failure to reset the RTBs. The existing TS Actions are sufficient to address either cause of inoperability. Both CTS Action 13 and ISTS Action Condition C require that the plant be placed in a Mode where the SI automatic actuation logic is not required operable. If the Actuation logic is restored to operable status the Actions are no longer applicable. If both trains of SI Actuation logic were affected, Specification 3.0.3 would be applicable and also require that the plant be removed from the applicable Mode.

The proposed change is acceptable because a separate Action condition is not required to ensure the appropriate Action is taken. Both the CTS and the ISTS Actions require that the actuation logic be restored to operable status or the plant be placed in a Mode where the ESFAS Function is no longer required. These Actions are applicable regardless of the cause of the inoperability and provide adequate assurance that the plant continues to be operated in a safe manner. In addition, the proposed change is acceptable because the CTS Action describing the inoperable condition of the SI automatic actuation logic after an inadvertent SI is retained in the bases. Although the need to reset SI after actuation is already clearly described in the ISTS Bases for the P-4 interlock, this additional description of the SI reset design feature of the Westinghouse Plants is added to the bases description of the SI automatic actuation logic. The description of conditions of operability for a system or component are normally contained in the ISTS Bases describing that component. Therefore, placing this information in the Bases and relying on the existing TS Actions for any inoperability is consistent with the ISTS. The proposed change is designated less restrictive because an Action requirement and Completion Time applicable in the CTS will not be in the ITS.

L.9 *(Category 4 - Relaxation of Required Action)* CTS Action #18 and #13 are applicable for several ESFAS Functions. Both these Actions contain shutdown requirements that ultimately place the plant in Cold Shutdown (Mode 5). The corresponding ITS Actions Conditions are B, F, and I for CTS Action #18 and ITS Conditions C and G for CTS Action #13. ITS Action Conditions B and C are similar to CTS Action #18 and #13 in that they also specify a plant shutdown to Mode 5. However, ITS Action Conditions F and G only require a plant shutdown to Mode 4 and ITS Condition I only requires a shutdown to Mode 3. CTS Actions 18 and 13 are revised to conform to the corresponding ISTS Action Conditions. This changes the CTS by dividing Action 18 and 13 into separate ITS Action Conditions and reducing the shutdown requirement in some of those Conditions to Mode 4 or Mode 3 instead of Mode 5.

CTS Action 18 and 13 are applicable for several ESFAS Functions and ultimately specify that the plant be placed in Mode 5. These CTS Actions are appropriate for ESFAS Functions that are required operable in Modes 1-4. The purpose of a TS Action is to place the plant in an operating Mode or condition where the affected ESFAS Function is no longer required operable if the Action requirements are not met or the Function is not restored to operable status. However, some of the ESFAS Functions for which the CTS Actions are used are only applicable (required operable) in Modes 1-3 or 1-2. As such, once the plant is placed in Mode 3 or 4 these Functions are no longer required operable and the CTS Actions requirement to place the plant in Mode 5 would no longer be applicable or appropriate. ITS Action Conditions F and G are similar to the corresponding CTS Actions but only require that the plant be placed in Mode 4 instead of Mode 5. ITS Action Condition I is similar to CTS Action 18 but only requires that the plant be placed in Mode 3. Therefore, for those Functions only required operable in Modes 1-3, ISTS Action Conditions F and G are used instead of CTS Actions 18 and 13 and for the Function only required operable in Modes 1-2 ITS Condition I is used instead of CTS Action 18.

The proposed change is acceptable because it makes the Required Actions for the affected ESFAS Functions more consistent with the operability requirements for the ESFAS Functions specified in the Applicability. The proposed change does not reduce the operability requirements for the affected Functions, nor does the proposed change affect the applicable safety analysis assumptions regarding those Functions. The proposed change only provides Action requirements that are more consistent with the Applicable Modes for the affected ESFAS Functions. In addition, the proposed change makes the ESFAS TS requirements consistent with the general rules of TS usage (i.e., the TS requirements are only applicable during the Mode of Applicability for the affected equipment). As such, the proposed change eliminates the overly conservative CTS Action to be in Mode 5 for Functions that are only required operable in Modes 1-3 or 1-2 and the potential confusion that could result from those Actions being inconsistent with the general rules of TS. The proposed change continues to assure the affected Functions are maintained operable when required by the applicable Mode, consistent with the assumptions of the applicable safety analyses, or that the plant is placed in a Mode where the Function(s) are no longer required. As such, the proposed change does not adversely affect the safe operation of the plant. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.10 (Unit 2 only) *(Category 3 - Relaxation of Completion Time)* CTS Action statement 42 applies the Turbine Trip and Feedwater Isolation and AFW Automatic Actuation Logic Functions and requires that with an inoperable channel the plant be placed in Hot Standby (Mode 3) in 6 hours and in Hot Shutdown (Mode 4) within the following 6 hours. The corresponding ISTS Action (Condition G) adds a requirement to restore the train to operable status in 6 hours prior to the requirement to be in Mode 3 and

Mode 4. In addition, the ISTS provides 12 hours to be in Mode 3 instead of the 6 hours required in the CTS. The CTS is revised to conform to the ISTS. This changes the CTS by allowing an additional 6 hours to restore the affected train to operable status prior to requiring the plant be placed in Mode 3.

The proposed change is acceptable because it establishes a reasonable time in which to restore the affected train of equipment to operable status (6 hours) before requiring the plant be shutdown to Mode 3. The additional 6 hours allowed by the proposed change does not introduce a significant additional risk to the safe operation of the plant and provides an alternative to immediately placing the plant in a shutdown transient without a fully operational ESFAS Function. Thus, the additional time provided by the proposed change may help to reduce the potential risk of placing the plant in a transient condition without a fully operational ESFAS. By establishing a fixed repair time, the proposed change provides a more structured action requirement that establishes a time in which the ESFAS Function must be repaired or the plant must be shutdown. The proposed time is sufficient to assure the Required Actions will be conducted in a safe and orderly manner. The proposed change does not alter the operability requirements of the affected Functions nor does it invalidate the assumptions of the applicable safety analyses. Therefore, the proposed change does not adversely affect the safe operation of the plant and continues to assure the plant is operated in a safe manner. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.11 *(Category 2 - Relaxation of Applicability)* The CTS Applicable Mode requirements on Table 4.3-2 for ESFAS Functions 1.d and 1.e (Pressurizer Pressure - Low and Steam Line Pressure - Low ) is given as Modes 1, 2, and 3. However, in CTS Table 3.3.3, the Mode 3 Applicability for these Functions is modified by a Note indicating the Function is not required below the P-11 setpoint. The corresponding ISTS requirement for these Functions on Table 3.3.2-1 also is modified by a Note indicating the Functions are only required operable above the P-11 setpoint. The requirements for these Functions on CTS Table 4.3-2 are revised to be consistent with the CTS requirements for these Functions in Table 3.3.3 and to conform to the requirements for these Functions in ISTS Table 3.3.2-1. This changes the CTS Table 4.3-2 surveillance requirements for these Functions by eliminating the need to perform the surveillance on these Functions in Mode 3 below the P-11 setpoint.

The proposed change is acceptable because it eliminates an inconsistency within the CTS requirements and because the proposed change is consistent with the assumptions of the applicable safety analyses. The requirements of CTS Table 3.3-3 and ISTS Table 3.3.2-1 correctly state that the Pressurizer Pressure - Low and Steam Line Pressure - Low Functions are not required below the P-11 setpoint. These Functions must be bypassed in order for a plant to shutdown (depressurize) without initiating an unnecessary SI. Therefore, the safety analyses do not credit these Functions below the P-11 setpoint when they may be disabled to allow a normal plant shutdown. Consistent with the rules of TS, surveillances are required to be met during the Applicable Modes of the affected equipment. Therefore, the proposed change also eliminates an inconsistency between the rules of using TS and the CTS applicability for these TS specified on Tables 3.3-3 and 4.3-2. The proposed change eliminates the overly conservative CTS surveillance requirements for these Functions. As the proposed change is consistent with the normal operation of the plant and with the assumptions of the applicable safety analyses it does not adversely affect the safe operation of the plant. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.12 *(Category 2 - Relaxation of Applicability)* The Applicability requirements specified on CTS Table 4.3-2 for Functions 4.d and 4.e (Steam Line Pressure-Low and Steam Line Pressure Rate - High Negative) require that the surveillances be met in Modes 1-3. However, in CTS Table 3.3.3, the Mode 3 Applicability for these Functions is modified by Notes indicating that the Steam Line Pressure - Low Function only required above the P-11 setpoint and the Steam Line Pressure Rate - High Negative Function is only required below the P-11 setpoint when SI on low steam line pressure is blocked. The ISTS also has notes that similarly modify the Mode 3 applicability of these ESFAS Functions. The applicability specified in CTS Table 4.3-2 for these two Functions is revised to be more consistent with the applicability specified in CTS Table 3.3-3 and ISTS Table 3.3.2-1. This changes the surveillance applicability specified in Table 4.3-2 such that the Mode 3 applicability for these two Functions is limited in Mode 3 to above and below P-11 and the Modes 1-2 applicability for the Steam Line Pressure Rate - High Negative Function is eliminated.

The proposed change is acceptable because it eliminates an inconsistency within the CTS requirements and because the proposed change is consistent with the assumptions of the applicable safety analyses. The requirements of CTS Table 3.3-3 and ISTS Table 3.3.2-1 correctly state that the Steam Line Pressure - Low Function is required above the P-11 setpoint and that the Steam Line Pressure Rate - High Negative Function is required below the P-11 setpoint. The Steam Line Pressure - Low Function must be bypassed in order for a plant to shutdown (depressurize) without initiating an unnecessary SI. At the time the Steam Line Pressure - Low Function is blocked the Steam Line Pressure Rate - High Negative Function is enabled to provide main steam isolation protection below P-11 (in place of the blocked Steam Line Pressure Low Function). This is a standard Westinghouse plant interlock function that is reflected in the ISTS and in the specific assumptions of the applicable safety analyses. In addition, consistent with the rules of TS, surveillances are required to be met during the Applicable Modes of the affected equipment. Therefore, the proposed change also eliminates an inconsistency between the rules of using TS and the CTS applicability for these TS specified on Tables 3.3-3 and 4.3-2. The proposed change eliminates the overly conservative CTS surveillance requirements for these Functions. As the proposed change is consistent with the normal operation of the plant and with the assumptions of the applicable safety analyses it does not adversely affect the safe operation of the plant. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.13 Unit 1 only. *(Category 1, and 5 - Relaxation of LCO Requirements, and Deletion of Surveillance Requirement)* The Unit 1 CTS Table 3.3-3 and 4.3-2 specify requirements for the manual initiation of the SI transfer from injection to re-circulation mode of operation. The corresponding Unit 2 and ISTS ESFAS TS do not contain requirements for the manual initiation of this ESFAS Function. The Unit 1 ESFAS TS is revised to conform to the corresponding requirements in the Unit 2 TS and ISTS. This changes the Unit 1 CTS by eliminating the TS requirements from CTS Tables 3.3-3 and 4.3-2 that address the manual initiation of the SI transfer from injection to re-circulation mode of operation.

The operation of the Unit 1 switchover Function is described in the UFSAR as an automatic Function. The applicable safety analyses do not credit manual initiation of this Function. Manual initiation of this Function is not addressed in the ISTS or in the Unit 2 CTS. As such, the proposed change to eliminate the TS requirements for this manual function is acceptable because it is consistent with the assumptions of the Unit 1 safety analyses and the content of the ISTS and because the automatic actuation instrumentation which is relied upon to perform this function remains within the TS. The retention of the automatic actuation feature of this Function provides adequate assurance that the function will be operable and capable of performing the required safety function when necessary. The applicable Modes of operation for the automatic actuation feature of this Function have been revised to include Mode 4 which encompasses all the operating Modes addressed by the manual actuation Function being eliminated. As such, the retained TS requirements for the automatic actuation of this function will be applicable in Modes 1-4 which is sufficient to assure the Unit continues to be operated within the assumptions of the applicable safety analyses and to replace the manual actuation requirement in Mode 4. In addition, the proposed change helps to minimize unnecessary differences between the Unit 1 and Unit 2 TS while maintaining consistency with the ISTS. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.14 *(Category 6- Relaxation of Surveillance Requirement Acceptance Criteria)* The CTS surveillances for the RCP bus voltage Function specified in Table 4.3-2 requires a quarterly Channel Functional Test (CFT). The corresponding ITS surveillance requirement for this ESFAS Function (SR 3.3.2.5) specifies a quarterly Trip Actuating Device Operational Test (TADOT). The ISTS TADOT requirement is modified by a note that specifies that verification of relay setpoints is not required. The CTS surveillance is revised to conform to the ISTS. This changes the CTS by adding a specific exception for setpoint verification when performing the quarterly functional test. The difference between the ISTS TADOT defined term and the CTS CFT defined term is addressed in the DOCs associated with TS Section 1.0, Definitions. This DOC is only intended to address the addition of the ISTS Note that takes exception to the verification of setpoints.

The relay instrumentation associated with this Function consists of simple contacts operated by an electro-mechanical relay that is not located where it is subject to an adverse environment. The associated instrument signal from the relay is not processed through complicated circuitry consisting of a variety of electronic components subject to age or environmental affects that may contribute to significant setpoint drift. In addition, setpoint verification requires removal of the associated relay which reduces the availability of the protection function, increases equipment wear, and introduces the potential for error by requiring repeated removal and installation of the equipment. It should also be noted that the addition of the proposed exception to the verification of setpoints is consistent with the requirements of the CTS CFT definition which also does not require setpoint verification.

Based on the discussion above and the fact that the operation of the affected relays and contacts continue to be tested every quarter and that the setpoints continued to be verified periodically every 18 months by the required channel calibration, the proposed change is acceptable. The proposed change provides adequate assurance that the affected instrumentation is maintained operable and does not adversely affect the safe operation of the plant. The proposed change is designated less restrictive because the

ITS requirement has a more explicit exception in the surveillance requirement than the CTS requirements stated in the CFT definition.

L.15 *(Category 5- Deletion of Surveillance Requirement)* The CTS surveillance requirements for the RCP bus undervoltage start of the AFW pumps include a channel check. The corresponding ISTS surveillance requirements for this ESFAS Function do not include a channel check. The CTS is revised to conform to the ISTS. This change results in the deletion of the CTS channel check surveillance for this function.

The proposed change is acceptable because the RCP bus undervoltage relay channels do not display the parameter they monitor (i.e., bus voltage). Therefore, the instrumentation channels used to display the bus voltage are not associated with the undervoltage relays. Checking the bus voltage indications confirms the relay is in the proper state for the existing bus voltage. However, considering the low setpoint of the relays in relation to the normal operating bus voltage, this operability verification does not provide a similar level of assurance as the more typical plant instrumentation channel checks. Typical channel checks are performed on protection instrumentation with associated indicators for the monitored parameters. In cases where the indication being checked is derived from the same instrumentation as the protection function, the channel check provides a more meaningful verification of protection channel performance. As such, the elimination of the CTS bus voltage channel checks will not significantly affect the operability or availability of the undervoltage relays. In addition, the remaining surveillances for the undervoltage relays continue to provide adequate assurance that the relays are maintained operable. As such the proposed change does not adversely affect the safe operation of the plant. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.16 *(Category 5- Deletion of Surveillance Requirement)* CTS surveillance 4.3.2.1.2 specifies in part that "The total interlock function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by interlock operation." The corresponding ISTS surveillances require an 18-month channel calibration of interlock channels and an actuation logic test every 31-days on a staggered test basis. The CTS surveillance is revised to conform to the ISTS surveillance. This changes the CTS by eliminating the 18-month surveillance requirement to verify the total interlock function at least every 18 months during the channel calibration.

The interlock functions are part of the solid state protection system (SSPS) logic circuits. Unlike the affected CTS surveillance, the ISTS addresses the testing of logic circuits separate from the channel calibration requirements. The ISTS channel calibration verifies the performance of each channel up to the logic circuits (where channels are combined and lose separate identities). The testing of each channel is governed by the channel calibration test definition that ensures the complete channel is verified. The ISTS actuation logic test verifies all combinations of logic inputs (channels) required for logic circuit operability including all required interlocks. As the interlock functions are combinations of channel inputs (e.g., 2/3, 2/4 etc.) in the logic circuitry, the interlock operation is verified during the actuation logic test. The interlock logic testing is governed by the ISTS actuation logic test definition that assures the "input combinations in conjunction with each possible interlock logic state required for OPERABILITY of a logic circuit" are tested. The logic and interlock testing is accomplished by the built in Westinghouse solid state protection system logic tester which also assures all required input combinations and interlocks are fully tested.

The proposed change is acceptable because, the required ISTS 18-month channel calibration and more frequent actuation logic test (every 31 days on a staggered basis) ensure the total interlock function continues to be verified at least once per 18 months (i.e., the same as the CTS surveillance requirement). The ISTS defined test terms provide additional assurance that individual channels and all required interlock functions are fully tested. In addition, by separating the logic testing from the channel calibration requirements, the ISTS presentation of the surveillance requirements associated with this instrumentation improve clarity and provide more technically accurate test requirements consistent with industry standards, and the SSPS design including the built in logic test capability. Therefore, the proposed change continues to provide adequate assurance of interlock channel and logic operability and does not adversely affect the safe operation of the plant. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

L.17 Unit 1 only. *( Category 3 - Relaxation of Completion Time)* The Unit 1 CTS specifies Action 38 for the P-4 interlock. Action 38 requires that the interlock be verified in its required state within 1 hour or Specification 3.0.3 must be applied. Note that Unit 1 Action 38 is the same as Unit 2 Action 38. The corresponding ISTS Action requirement (Condition F) specifies that with one inoperable channel or train the inoperable channel or train be restored to operable status within 48 hours or that the plant be placed in Mode 4 in 60 hours. In Mode 4, the P-4 interlock Function is no longer required operable. The corresponding Unit 2 CTS Action (#45) for the P-4 Function also specifies that the inoperable channel be restored to operable status within 48 hours or the plant be placed in a Mode 4 in 60 hours. The Unit 1 Action for the P-4 interlock Function is revised to conform to the corresponding ISTS (and Unit 2) Action requirements. This changes the Unit 1 Action by allowing 48 hours to restore the interlock to operable status and up to 60 hours to be in Mode 4 if the interlock is not restored to operable status instead of requiring the interlock to be verified in its required state within 1 hour or apply the actions of Specification 3.0.3.

The P-4 interlock is enabled by the reactor trip breaker (RTB) position. When the RTB and associated bypass breaker are open the P-4 interlock is enabled. The interlock provides several functions including blocking automatic SI to allow manual control of the SI equipment and trip of the main turbine. These functions are performed after the P-4 is enabled (i.e., after a reactor trip). The P-4 interlock is a two train Function, each train associated with an RTB train.

The additional time allowed by the ITS Action for restoration and reducing power if the affected equipment is not restored is acceptable considering Condition F is limited to a single inoperable train and, therefore, the other P-4 train would still be operable and capable of performing the required safety function. As such, the allowance to operate for the additional time specified in the ITS is acceptable due to the low probability of a design basis event occurring within the additional time allowed by the ITS that would require both trains of the P-4 interlock to be available. In addition, the time allowed by the ITS Action provides a more reasonable time in which to effect repairs and which may avoid the additional risk that may result from placing the plant in a shutdown transient without the P-4 interlock trains being fully operable. Therefore, the proposed change continues to provide adequate assurance that the plant is operated within the assumptions of the applicable safety analysis or that the plant is placed in a mode where the P-4 interlock is no longer required. Thus, the proposed change does not adversely affect the safe operation of the plant. The proposed change is designated less restrictive because less stringent requirements will be applied in the ITS than in the CTS.

## *More Restrictive Changes (M)*

M.1 Unit 2 only. The Unit 2 Turbine Trip and Feedwater Isolation consists of three ESFAS Functions. The requirements for the Safety Injection input are addressed separately under Function 1 in the CTS. However, the operability requirements for the SG Water Level High-High Function and the Automatic Actuation Logic and Relays Function are addressed under the Turbine Trip and Feedwater Isolation Function. The CTS SG Water Level High-High Function is required operable in Modes 1-3 and the CTS Automatic Actuation Logic and Relays Function is only required operable in Modes 1-2. The corresponding ISTS Functions indicate that Mode 3 is optional (bracketed). The CTS is revised to make both these Functions required operable in Mode 3. This changes the CTS by requiring the Automatic Actuation Logic and Relays Function operable in Mode 3 as well as Modes 1-2.

The Turbine Trip and Feedwater Isolation Function provides protection against SG overfill which can result in carryover (turbine damage) or excessive primary plant cooldown. As stated in the ISTS Bases, the Feedwater Isolation Function is necessary when the Main Feedwater lines are used to feed the SG. The SG Water Level High-High Function and the Automatic Actuation Logic and Relays Function are not independent actuation Functions. The SG level instrumentation must initiate a Feedwater Isolation via the Automatic Actuation Logic and Relays. Therefore, the operability requirements for these ESFAS Functions should be the same in order to facilitate automatic Feedwater Isolation in Mode 3. The proposed change is acceptable because it makes the operability requirements for the Turbine trip and Feedwater Isolation Function consistent with each other in Mode 3. In Mode 3, the main feedwater lines may be used to feed the SGs. Therefore, the proposed change enables the Automatic Actuation Logic and Relays Function in Mode 3 to support the Turbine Trip and Feedwater Isolation Function on high SG water level. The proposed change provides additional assurance that the ESFAS Function will be available when required to prevent SG overfill. The proposed change is designated more restrictive as more stringent requirements will be applicable in the ITS than in the CTS.

M.2 CTS Action statement 13 applies the trains of Automatic Actuation Logic and requires that with an inoperable channel the plant be placed in Hot Standby (Mode 3) in 12 hours and in Cold Shutdown (Mode 5) within the following 30 hours. The corresponding ISTS Action (Condition C) adds an additional requirement to restore the train to operable status in 6 hours prior to the requirement to be in Mode 3 in 12 hours and Mode 5 in the following 30 hours. The CTS is revised to conform to the ISTS. This changes the CTS by adding a specific Action requirement to restore the affected train to operable status in 6 hours.

The proposed change is acceptable because it establishes a reasonable time in which to restore the affected train of equipment to operable status (6 hours) while establishing a sufficient amount of time (the remaining 6 out of 12 total hours) to conduct an orderly plant shutdown to Mode 3 from Mode 1. The proposed change provides assurance that the Action will be conducted in a safe and orderly manner by establishing a limit on the time allowed for repair. By establishing a fixed repair time, the proposed change provides a more structured plant shutdown requirement that establishes a time in which the plant shutdown must be conducted. The time established for plant shutdown (the remaining 6 hours after the 6 hour restoration time) is a sufficient time to assure the plant shutdown is conducted in a safe and orderly manner that does not challenge plant equipment or personnel. Therefore, the proposed change does not adversely affect the safe operation of the plant and continues to assure the plant is operated in a safe manner. The proposed change is designated more restrictive as more stringent requirements will be applicable in the ITS than in the CTS.

M.3 The CTS Actions require that "the inoperable channel is placed in trip [or in bypass] ". The corresponding ISTS Action Conditions specify the same Action but also include the requirement that if the channel is not placed in the trip condition or bypassed the affected unit must be removed from the Applicable Mode associated with the ESFAS Function. The additional ISTS Action requires power and Mode reductions to place the affected unit in a Mode where the ESFAS Function is no longer required operable. The CTS is revised to include the ISTS Action requirement to remove the unit from the Applicable Mode for the affected ESFAS Function. This changes the CTS by including specific Action(s) to remove the unit from the Applicable Mode of the affected ESFAS Function if the Action is not met.

The allowance to continue to operate with an inoperable channel in the trip condition or bypassed is based on the fact that the remaining operable channels continue to provide an ESFAS Function that is single failure proof. The inoperable channel in the trip condition provides its safety function input to the actuation logic associated with the ESFAS Function. Only one of the remaining operable channels needs to trip in order to accomplish the actuation logic (typically 2-out-of-3 or 2-out-of-4). Failure to place the inoperable channel in the trip condition results in a situation where both the remaining operable channels must trip in order to accomplish the actuation logic. Therefore, failure to place the channel in the trip condition could result in the potential for a single failure of an instrument channel preventing the ESFAS Function from being accomplished.

The reason certain channels are placed in bypass when inoperable is to minimize the risk of inadvertently actuating certain ESFAS Functions (e.g., Containment Spray or Automatic Switchover to Containment Sump). An inadvertent containment spray during normal power operation would not be conducive to the safe operation of the plant. An inoperable containment pressure channel left in the trip condition would only require one additional channel to trip for actuation. Inadvertent containment spray initiation on a single channel actuation is an undue risk to the safe operation of the plant. Therefore, placing the inoperable channel in bypass provides assurance that the actuation logic will continue to require two channels to initiate the ESFAS Function. The actuation logic for ESFAS Functions with channels placed in bypass instead of trip is configured in a 2-out-of-4 actuation logic. This configuration allows one channel to be bypassed and still have a 2-out-of-3 actuation logic that is single failure proof.

As such, the proposed change is acceptable because it ensures the plant is placed in a Mode where the ESFAS Function is no longer required operable when the channels that comprise that Function may be susceptible to a single failure that could prevent the Function from being accomplished or when the potential for an inadvertent actuation of the Function presents an undue risk to the safe operation of the plant. As the proposed change adds new Action requirements to the CTS, it is designated more restrictive.

M.4 The CTS Action #16 requires that the inoperable channel be placed in the bypassed condition. The CTS Action does not specify a time in which the channel must be placed in the bypassed condition. The corresponding ITS Action Conditions E and J require that the affected channel be placed in the bypassed condition within 6 hours. The CTS Action is revised to conform to the ITS. This changes the CTS Action by limiting the time operation may continue before the affected channel must be bypassed.

The reason certain channels are placed in bypass when inoperable is to minimize the risk of inadvertently actuating certain ESFAS Functions (e.g., Containment Spray or Automatic Switchover to Containment Sump). An inadvertent containment spray during normal power operation would not be conducive to the safe operation of the plant. An inoperable containment pressure channel left in the trip condition would only require one additional channel to trip for actuation. Inadvertent containment spray initiation on a single channel actuation is an undue risk to the safe operation of the plant. Therefore, placing the inoperable channel in bypass within 6 hours limits the time the plant is exposed to the increased risk of inadvertent actuation of the ESFAS Function. The proposed change provides additional assurance that the actuation logic will continue to require two channels to initiate the ESFAS Function. The actuation logic for ESFAS Functions with channels placed in bypass instead of trip is configured in a 2-out-of-4 actuation logic. This configuration allows one channel to be bypassed and still have a 2-out-of-3 actuation logic that is single failure proof.

As such, the proposed change is acceptable because it provides added assurance that the channel is placed in a condition that limits the potential for an inadvertent actuation of the associated ESFAS Function. Thus, the proposed change helps to limit the risk to the safe operation of the plant. As the proposed change adds new Action requirements to the CTS, it is designated more restrictive.

M.5 CTS Action #38 applies to the ESFAS Interlock Functions and addresses with less than the minimum number of channels operable. In the case of the ESFAS Interlocks, the minimum channels required operable is one less than the total number of channels. Therefore, CTS Action #38 is not applicable until two interlock channels become inoperable. The corresponding ITS Action Condition K is applicable when one or more interlock channels are inoperable. The CTS Action is revised to conform to the ISTS Action. This changes the CTS by making the Required Actions applicable when the first interlock channel becomes inoperable instead of waiting until two interlock channels are inoperable.

The CTS interlock Action requirements would allow continued operation without taking action when a single interlock channel becomes inoperable. The proposed change would require the interlock status be verified correct for current plant conditions whenever a single interlock channel becomes inoperable. The proposed change is acceptable because it provides additional assurance that the plant continues to be operated in a safe manner consistent with the assumptions of the applicable safety analyses. The proposed change would specify additional action not required by the CTS to verify the interlock is in the required state for the existing plant conditions. This action confirms the operability of the required ESFAS Functions enabled by the affected interlock and thereby confirms the assumptions of the applicable safety analyses are met without imposing an undue or significant additional restriction on plant operation. As the proposed change adds new Action requirements to the CTS, it is designated more restrictive.

M.6 CTS Action 38 is applicable to the ESFAS Functions (i.e., P-11, and P-12). CTS Action 38 requires that the interlock be determined to be "in its required state for the existing plant condition". The default action requirement if the interlock can not be determined to be in the required state within 1 hour is to apply Specification 3.0.3. Specification 3.0.3 allows 1 hour to prepare for a plant shutdown and then up to 6 hours to be in Mode 3 and another 6 hours to be in Mode 4 or 14 hours total from when the channel is first declared inoperable and the Action is first applicable. The corresponding ITS Action K contains a different default Action if the interlock can not be verified to be in the required state. The ITS Condition requires the plant be placed in Mode 3 in a total of 7 hours and Mode 4 in a total of 13 hours. The CTS Action is revised to conform to the ISTS. This changes the CTS Action by including the specific power reduction necessary to remove the plant from the applicable Mode for the affected interlock Function and by reducing the total time allowed to complete the actions by 1 hour.

The proposed change is acceptable because it is necessary to conform to the ISTS and because it simplifies the required Actions consistent with the Applicable Modes of the affected ESFAS Functions. Typically in the ISTS, the Action requirements provide the appropriate default Actions to assure the plant is placed in a safe Mode without referencing Specification 3.0.3. The CTS requirement to apply Specification 3.0.3 is unnecessary to assure the plant is placed in a safe condition if an ESFAS interlock is inoperable or can not be verified in the required state. The slightly reduced time to complete the required actions is also acceptable because it is conservative with respect to the CTS Action but remains sufficient to safely complete the required power reduction without challenging plant systems or operations personnel. Thus, the proposed change provides additional assurance that the plant is operated consistent with the assumptions of the applicable safety analyses or that the plant is placed in a Mode of operation where the affected ESAFAS Functions are no longer required operable. As the proposed change reduces the total time allowed to complete the Actions, it is designated more restrictive.

M.7 Not used.

M.8 Unit 1 only. The Unit 1 general ESFAS surveillance requirement 4.3.2.1.1 specifies the instrumentation to be tested and the surveillances that must be performed in a similar manner as the corresponding Unit 2 general surveillance requirement. However, unlike Unit 2, the Unit 1 requirement does not specify that interlock, automatic actuation logic, and master and slave relay instrument functions are included in the ESFAS surveillance requirements. The corresponding ISTS ESFAS requirements do not include a general surveillance requirement similar to CTS 4.3.2.1.1. Instead, the ISTS surveillance requirements are specified in detail on Table 3.3.2-1. However, the ISTS ESFAS surveillance requirements, similar to the Unit 2 ESFAS TS, specify that testing be performed on interlock, automatic actuation logic, and master and slave relay instrument functions. The Unit 1 CTS surveillance

4.3.2.1.1 is revised to conform more closely to the corresponding Unit 2 and ISTS ESFAS surveillance requirements. This changes the Unit 1 CTS by adding a more specific surveillance requirement for the interlock, automatic actuation logic, and master and slave relay instrument functions.

The new Actuation Logic Test and Master Relay Test requirements correspond closely with the Unit 1 CTS test requirements specified for the Automatic Actuation Logic on Table 4.3-2. The Unit 1 Automatic Actuation Logic surveillance is required to be performed such that each train is tested once every other month which is consistent with the "Staggered Test Basis" performance requirements for the ISTS Actuation Logic and Master Relay Test requirements. The frequencies of the new test requirements are indicated on Table 4.3-2 with the exception of the Slave Relay Test. The Slave Relay Test is a new test requirement that is unrelated to the CTS test requirements shown on Table 4.3-2. As such, the frequency of this new Unit 1 test requirement is shown separately as once per 18 months. As the slave relay test requirement is a new TS requirement for Unit 1, an 18 month Frequency was selected to correspond to the current plant practice for testing many of the affected relays and other TS surveillance requirements for verifying ESF component (i.e., pump and valve) automatic actuation and to maximize scheduling flexibility while minimizing equipment out of service time. The ISTS specifies a bracketed (optional) 92-day surveillance interval for performing slave relay testing. The presentation of this surveillance Frequency in the CTS 4.3.2.1.1 general surveillance requirement is similar to the Unit 2 presentation of this test frequency.

The elimination of the CTS general surveillance requirement 4.3.2.1.1 is addressed in the Unit 2 DOC that shows this CTS surveillance being replaced by the individual surveillance requirements on ISTS Table 3.3.2-1. This DOC is only intended to address the addition of specific surveillance requirements to Unit 1 that were already part of the Unit 2 TS.

The proposed change includes the addition of testing requirements not previously defined in the Unit 1 CTS. These additional requirements include the following tests defined in Section 1.0 of the TS; Actuation Logic test, Master Relay Test, and Slave Relay Test. The addition of these new test definitions was addressed in Section 1.0 of the TS. The revised test requirements more accurately describe the required testing of the solid state protection system (SSPS) consistent with the Unit 2 CTS and the ISTS. The proposed change is acceptable because the inclusion of these test requirements is consistent with the Unit 1 SSPS design (including the associated test panels) and because the inclusion of these specific test provisions also provide additional assurance that the Unit 1 SSPS will be verified operable consistent with the current industry standard test terms. As the proposed change is consistent with the Unit 1 design and current industry practice, the proposed change does not adversely affect the safe operation of the unit and will continue to help assure the plant is operated within the assumptions of the applicable safety analyses. As the proposed change adds new surveillance requirements to the Unit 1 CTS, it is designated more restrictive.

M.9 Unit 1 only. The Unit 1 ESFAS Automatic Actuation Logic Functions specified on Table 3.3-3 are revised to include the associated "Actuation Relays". In addition, the Unit 1 surveillance requirements specified on Table 4.3-2 are revised to include the Actuation Relays which results in the corresponding Master and Slave Relay Surveillance Test requirements (as shown on the markup of Unit 2 CTS Table 4.3-2) being applicable to Unit 1. The addition of these new surveillance requirements are also discussed in more detail in DOC M.8 above. The proposed addition of Actuation Relays and the associated surveillances to the existing requirements for the Automatic Actuation Logic Functions make these Unit 1 Functions more consistent with the corresponding Unit 2 and ISTS Functions. This changes the Unit 1 ESFAS requirements by adding specific requirements for SSPS Actuation Relay operability to the ESFAS requirements specified on CTS Table 3.3-3 and 4.3-2. All the new ITS surveillance requirements applicable to the Unit 1 ESFAS Functions are the same as shown on the markup of Unit 2 CTS Table 4.3-2 and are not repeated in the markup of the Unit 1 Table 4.3-2.

The Master and Slave Actuation Relays and associated test panels are a standard design feature of the Westinghouse plant SSPS. The proposed change implements standard industry requirements for these relays that were incorporated into the standard Westinghouse Plant TS after Unit 1 was originally licensed. The Unit 1 SSPS design includes the test panels necessary to verify the operability of these relays and meet the standard TS requirements for relay testing.

The proposed change is acceptable because the inclusion of the Actuation Relay requirements is consistent with the Unit 1 SSPS design (including the associated test panels) and because the inclusion of these specific relay requirements is necessary to provide assurance of the overall operability of the Unit 1 SSPS. The proposed change includes new and specific requirements in the TS for the Actuation Relay portion of the SSPS. Thus, the proposed change provides a more complete set of TS requirements to address the overall functional capability of the SSPS. As the proposed change is consistent with the Unit 1 SSPS design and makes the TS requirements for Unit 1 more consistent with Unit 2 and with the ISTS, the proposed change does not adversely affect the safe operation of Unit 1 and provides additional assurance of the Unit 1 SSPS operability. As the proposed change adds new requirements to the Unit 1 CTS, it is designated more restrictive.

M.10 Unit 1 only. The CTS requirements for the automatic actuation logic and RWST level instrumentation for the SI transfer from injection to re-circulation mode Function require this instrumentation to be operable in Modes 1-3. These requirements are specified in both Unit 1 CTS Table 3.3-3 and CTS Table 4.3-2. The corresponding Unit 2 and ISTS instrumentation is required operable in Modes 1-4. The Unit 1 CTS requirements for this instrumentation on both Tables are revised to conform to the ISTS and corresponding Unit 2 TS. This changes the Unit 1 CTS by adding Mode 4 to the Applicability requirements specified on CTS Tables 3.3-3 and 4.3-2 for this instrumentation.

The proposed change is acceptable because it provides additional assurance that the automatic switchover instrumentation is maintained operable in all the Modes where it may be required to mitigate an event. The proposed change requires the instrumentation operable in Mode 4 (in addition to Modes 1-3). Although the proposed change increases the operability requirements of the affected instrumentation, the change is consistent with the requirements for other SI instrumentation and, therefore, does not place an undue burden on the plant equipment or personnel. In addition, the proposed change makes the Unit 1 and 2 requirements for this instrumentation the same while maintaining consistency with the corresponding ISTS requirements. Thus, the proposed change assures the plant continues to be operated in a safe manner with no adverse impact to equipment availability or personnel. As the proposed change adds new requirements to the Unit 1 CTS, it is designated more restrictive.

M.11 Unit 1 only. The CTS Turbine Trip and Feedwater Isolation ESFAS Function specified on Tables 3.3-3 and 4.3-2 is revised to include requirements for the Automatic Actuation Logic and Actuation Relays and SI Functions. The proposed addition of Automatic Actuation Logic and Actuation Relays and the associated surveillances to the existing requirements for the Turbine Trip and Feedwater Isolation Function make this Unit 1 Function more consistent with the corresponding Unit 2 and ISTS Functions. This changes the Unit 1 ESFAS requirements by adding specific requirements for SSPS Automatic Actuation Logic and Actuation Relays and SI Functions to the ESFAS requirements specified on CTS Table 3.3-3 and 4.3-2 for the Turbine Trip and Feedwater Isolation ESFAS Function.

The Unit 1 surveillance requirements are revised to include the Actuation Logic and Actuation Relays for this Function which results in the corresponding Actuation Logic Surveillance Test and Master and Slave Relay Surveillance Test requirements (as shown on the markup of Unit 2 CTS Table 4.3-2) being applicable to Unit 1. All the new ITS surveillance requirements applicable to the Unit 1 ESFAS Functions are the same as shown on the markup of Unit 2 CTS Table 4.3-2 and are not repeated in the markup of the Unit 1 Table 4.3-2.

The Automatic Actuation Logic, Master, and Slave Actuation Relays and associated test panels are a standard design feature of the Westinghouse plant SSPS. The proposed change implements standard industry requirements for these Functions that were incorporated into the standard Westinghouse Plant TS after Unit 1 was originally licensed. The Unit 1 SSPS design includes the test panels necessary to verify the operability of the Actuation Logic and relays which meets the standard TS requirements for testing these Functions. The addition of the SI Function to the list of initiating Functions is also consistent with the Unit 1 design and consistent with the format and presentation of the initiating Functions in more current standard TS.

The proposed change is acceptable because the inclusion of the Automatic Actuation Logic and Actuation Relay requirements and SI initiation to the Turbine Trip and Feedwater Isolation ESFAS Function is consistent with the Unit 1 SSPS design (including the required test panels) and because the inclusion of these specific requirements is necessary to provide assurance of the overall operability of the Unit 1 Turbine Trip and Feedwater Isolation ESFAS Function. Thus, the proposed change provides a more complete set of TS requirements to address the overall functional capability of the Turbine Trip and Feedwater Isolation ESFAS Function. As the proposed change is consistent with the Unit 1 SSPS design and makes the TS requirements for Unit 1 more consistent with Unit 2 and with the ISTS, the proposed change does not adversely affect the safe operation of Unit 1 and provides additional assurance of the Unit 1 ESFAS Function operability. As the proposed change adds new requirements to the Unit 1 CTS, it is designated more restrictive.

M.12 Unit 1 only. The CTS AFW ESFAS Function specified on Tables 3.3-3 and 4.3-2 is revised to include requirements for the Automatic Actuation Logic and Actuation Relays. The proposed addition of Automatic Actuation Logic and Actuation Relays and the associated surveillances to the existing requirements for the AFW Function make this Unit 1 Function more consistent with the corresponding Unit 2 and ISTS Functions. This changes the Unit 1 ESFAS requirements by adding specific requirements for SSPS Automatic Actuation Logic and Actuation Relays to the ESFAS requirements specified on CTS Table 3.3-3 and 4.3-2 for the AFW ESFAS Function.

The Unit 1 surveillance requirements are revised to include the Actuation Logic and Actuation Relays for this Function which results in the corresponding Actuation Logic Surveillance Test and Master and Slave Relay Surveillance Test requirements (as shown on the markup of Unit 2 CTS Table 4.3-2) being applicable to Unit 1. All the new ITS surveillance requirements applicable to the Unit 1 ESFAS Functions are the same as shown on the markup of Unit 2 CTS Table 4.3-2 and are not repeated in the markup of the Unit 1 Table 4.3-2.

The Automatic Actuation Logic, Master, and Slave Actuation Relays and associated test panels are a standard design feature of the Westinghouse plant SSPS. The proposed change implements standard industry requirements for these Functions that were incorporated into the standard Westinghouse Plant TS after Unit 1 was originally licensed. The Unit 1 SSPS design includes the test panels necessary to verify the operability of the Actuation Logic and relays which meets the standard TS requirements for testing these Functions.

The proposed change is acceptable because the inclusion of the Automatic Actuation Logic and Actuation Relay requirements to the AFW ESFAS Function is consistent with the Unit 1 SSPS design (including the required test panels) and because the inclusion of these specific requirements is necessary to provide assurance of the overall operability of the Unit 1 AFW ESFAS Function. Thus, the proposed change provides a more complete set of TS requirements to address the overall functional capability of the AFW ESFAS Function. As the proposed change is consistent with the Unit 1 SSPS design and makes the TS requirements for Unit 1 more consistent with Unit 2 and with the ISTS, the proposed change does not adversely affect the safe operation of Unit 1 and provides additional assurance of the Unit 1 ESFAS Function operability. As the proposed change adds new requirements to the Unit 1 CTS, it is designated more restrictive.

M.13 Unit 1 only. The CTS requirements for the AFW pump start on RCP bus undervoltage Function require this instrumentation to be operable in Mode 1. The corresponding Unit 2 and ISTS instrumentation is required operable in Modes 1-2. The Unit 1 CTS requirements for this instrumentation are revised to conform to the ISTS and corresponding Unit 2 TS. This changes the Unit 1 CTS by adding Mode 2 to the Applicability requirements for this instrumentation.

The proposed change is acceptable because it provides additional assurance that the automatic AFW pump start instrumentation is maintained operable in all the Modes where it may be required to mitigate an event. The proposed change requires the instrumentation operable in Mode 2 (in addition to Mode 1). Although the proposed change increases the operability requirements of the affected instrumentation, the change makes the applicability of this Function more consistent with the applicability for other AFW pump start instrumentation. In addition, the implementation of the proposed change does not represent an undue burden on plant equipment or personnel. The proposed change also makes the Unit 1 and 2 requirements for this instrumentation the same while maintaining consistency with the corresponding ISTS requirements. Thus, the proposed change assures the plant continues to be operated in a safe manner with no adverse impact to equipment availability or personnel. As the proposed change adds new requirements to the Unit 1 CTS, it is designated more restrictive.

M.14 Unit 1 only. The Unit 1 CTS specifies Action 38 for the P-4 interlock. Action 38 requires that the interlock be verified in its required state within 1 hour or Specification 3.0.3 must be applied. Note that Unit 1 Action 38 is the same as Unit 2 Action 38. The corresponding ISTS Action requirement (Condition F) specifies that the inoperable channel or train be restored to operable status within 48 hours or that the plant be placed in Mode 4 in 60 hours. In Mode 4, the P-4 interlock Function is no longer required operable. The corresponding Unit 2 CTS Action (#45) for the P-4 Function also specifies that the inoperable channel be restored to operable status within 48 hours or the plant be placed in a Mode 4 in 60 hours. The Unit 1 Action for the P-4 interlock Function is revised to conform to the corresponding ISTS (and Unit 2) Action requirements. This changes the Unit 1 Action by requiring the inoperable channel be restored to operable status within 48 hours instead of simply verifying the interlock status.

The P-4 interlock is enabled by the reactor trip breaker (RTB) position. When the RTB and associated bypass breaker are open the P-4 interlock is enabled. The interlock provides several functions including blocking automatic SI to allow manual control of the SI equipment and trip of the main turbine. These functions are performed after the P-4 is enabled (i.e., after a reactor trip). The P-4 interlock is a two train Function, each train associated with an RTB train.

The proposed change is acceptable because restoration of an inoperable train of the P-4 interlock provides assurance that the functions performed by the interlock will be accomplished even with the single failure of an interlock train. The CTS Action did not require restoration of an inoperable train of the P-4 interlock. As such, the revised Action ensures the operability of both trains of the P-4 interlock is maintained to enable the interlock to perform its required functions in the event a single failure of an interlock train occurs. Therefore, the proposed change provides additional assurance that the plant continues to be operated in a safe manner consistent with the applicable safety analyses. As the proposed change adds new requirements to the Unit 1 CTS, it is designated more restrictive.

M.15 The CTS surveillance requirements for the P-11 and P-12 ESFAS interlock Functions do not include a channel check of the associated instrumentation. The corresponding ISTS surveillance requirements for these ESFAS Functions include a channel check (SR 3.3.2.1). The CTS requirements are revised to conform to the ISTS. This changes the CTS by adding a channel check (SR 3.3.2.1) for the instrumentation associated with the P-11 and P-12 Interlock Functions.

The proposed change is acceptable because the inclusion of the channel check surveillance requirement results in more frequent operability verifications that provide additional assurance the required instrumentation remains operable. The additional checks of the channel indications performed every 12 hours do not represent an undue burden on the operating staff and help to detect gross instrument channel failure. As such, the proposed change does not adversely affect the safe operation of the plant and provides some additional assurance that the plant continues to be operated in a safe manner. As the proposed change adds new requirements to the CTS, it is designated more restrictive.

## Removed Detail Changes (LA)

LA.1 *(Type 3 - Removing Procedural Details for Meeting Tech Spec Requirements)* CTS Surveillance 4.3.2.1.3 specifies that response time testing be performed for the ESFAS instrument Functions. The CTS surveillance includes guidance for performing the testing that specifies "Each test shall include at least one logic train such that both logic trains are tested at least once per 36 months". The corresponding ISTS surveillance requirement does not contain similar guidance for performing the response time testing. The CTS is revised to conform to the ISTS and the CTS guidance for performing response time testing is moved into the bases for the response time test surveillance. This change also includes the editorial revisions made to the corresponding Unit 1 response time testing surveillance (not shown) to change the Unit 1 CTS wording from "test" and "tested" to the more common ISTS descriptive terms of "verify" and "verified" which is also consistent with the corresponding Unit 2 surveillance.

The removal of the procedural guidance in the CTS surveillance requirement is acceptable because this type of information is not necessary to be included in the TS to provide adequate protection of public health and safety. The editorial changes (test to verify) made to the Unit 1 text being removed are acceptable because they do not affect the technical intent of the surveillance. The ITS still retains the requirement that response time testing be performed for the required instrument Functions. The procedural method of testing specified in the CTS is not required in order for the LCO operability requirements to be applicable and enforced. The editorial changes to the Unit 1 material being removed are made solely to conform to the ISTS presentation of this information and with the current Unit 2 terminology. Also, the removal of the procedural guidance is acceptable because it will be adequately controlled in the ITS Bases consistent with the format and content of the ISTS. Changes to the Bases are controlled by the TS Bases Control Program specified in the Administrative Controls Section of the TS. This program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because procedural detail is being removed from the TS.

LA.2 *(Type 1 - Removing Details of System Design and System Description, Including Design Limits)* The Channels To Trip column in CTS Table 3.3-3 is deleted consistent with the ISTS. This includes some channels to trip information in the total number of channels column. The corresponding ISTS ESFAS Table 3.3.2-1 does not include this information. The system description of each ESFAS Function is contained in the ISTS bases.

The proposed change is acceptable because the Channels To Trip column in CTS Table 3.3-3 contains information describing the design of the ESFAS which is not required to ensure the ESFAS system is maintained operable. The ISTS "Required Channels" specifies the necessary channels to maintain the ESFAS operable and the ISTS Actions provide the appropriate measures when the Required Channels are not met.

ESFAS design features are described in the UFSAR. Changes to the plant design as described in the UFSAR are subject to the review requirements of 10 CFR 50.59. In addition, the requirements for the ESFAS design are also controlled by the required industry standards (IEEE 279, etc.), federal regulations (General Design Criteria), and specific NRC requirements and guidelines pertaining to the ESFAS. Changes to these plant design requirements are in turn controlled in accordance with the Quality Control Programs that are required by federal regulations (10 CFR 50.54). Also, this change is acceptable because the design description information will be retained within the ITS bases for each ESFAS Function and changes to the ITS Bases are controlled by the TS Bases Control Program specified in the Administrative Controls Section of the TS. This program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because design detail is being removed from the TS.

LA.3 *(Type 1 - Removing Details of System Design and System Description).* The CTS requirements for the steam generator (SG) water level low-low instrumentation used to start the AFW pumps are divided into the two functions performed by the instrumentation (i.e., start of the Turbine Driven AFW pump and start of the Motor-Driven AFW pumps). The corresponding ISTS requirements simply list the required instrumentation without attempting to present it in terms of the Functions it performs. The instrument functions are described in the ISTS Bases. The CTS is revised to conform to the ISTS. This changes the CTS by simplifying the presentation of the required channels to a single line item in CTS Tables 3.3-3 and 4.3-2 and moving the description of the instrument functions to the Bases.

The SG level instrumentation used for the two different AFW pump start functions consists of the same instrument channels with the same setpoints, surveillances and Actions. The different AFW pump start actuations are a function of the actuation logic. The single set of SG level channels are combined in the actuation logic circuits to provide the required AFW start. Other ESFAS requirements address the actuation logic and actuating relays that provide the different AFW start functions. The proposed change is acceptable because the instrument channels and associated ESFAS requirements are the same for each AFW pump start feature. If a SG level instrument channel is inoperable, both AFW pump start features are affected and the resulting Action is the same. Listing this instrumentation twice in ESFAS Tables 3.3-3 and 4.3-2 is redundant and does not provide any additional safety benefit. Therefore, a separate listing of each AFW start feature of this instrumentation is not necessary in the ESFAS TS to ensure the instrumentation is maintained operable and that appropriate Action is taken when a channel becomes inoperable. The instrumentation need only be listed once in order to provide adequate assurance that it is maintained capable of performing its required safety Function.

The removal of the description of the instrument functions is acceptable because this type of information is not necessary to be included in the TS to provide adequate protection of public health and safety. The ITS still retains the requirement that the SG level instrumentation be operable. The description of the AFW start features provided by this instrumentation is not required in the TS in order for the LCO operability requirements to be applicable and enforced. Also, this change is acceptable because this type of procedural guidance will be adequately controlled in the ITS Bases consistent with the format and content of the ISTS. Changes to the Bases are controlled by the TS Bases Control Program specified in the Administrative Controls Section of the TS. This program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because design detail is being removed from the TS.

LA.4 *(Type 1 - Removing Details of System Design and System Description).* The titles of the CTS AFW ESFAS Functions contain an additional description of the Function that includes the specific pump start feature of each Function (e.g., start of Turbine-Driven Pump). The corresponding ISTS Functions do not contain this descriptive information. The CTS is revised to conform to the ISTS. This changes the CTS by moving the Function design descriptions to the Bases.

The removal of the descriptive material from the CTS ESFAS Function titles is acceptable because this system design information is not necessary to be included in the TS to provide adequate protection of public health and safety. The ITS still retains the requirement that the ESFAS Functions be maintained operable. The description of the ESFAS Function design in the CTS is not required in order for the LCO operability requirements for the instrumentation to be applicable and enforced. Also, this change is acceptable because this design information will be adequately controlled in the ITS Bases consistent with the format and content of the ISTS. Changes to the Bases are controlled by the TS Bases Control Program specified in the Administrative Controls Section of the TS. This program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because design descriptions are being removed from the TS.

LA.5 *(Type 1 - Removing Details of System Design and System Description, Including Design Limits)* The allowable values specified for CTS SG level Functions 5.b and 7.b on Table 3.3-3 contain design related descriptions that help to describe the allowable values (i.e., % of narrow range instrument span.). The corresponding ISTS allowable values specified on Table 3.3.2-1 do not contain this additional descriptive information and simply present the allowable values as numerical values denoted as a percent. The CTS allowable values are revised to conform more closely to the corresponding ISTS allowable values. This changes the CTS by moving the design details associated with each allowable value listed above into the Bases description of the associated ESFAS Function.

The proposed change is acceptable because it is necessary to conform more closely to the ISTS and because the design description associated with each affected allowable value is not required in the TS to ensure the operability of the associated ESFAS Function. The ITS continues to specify the setpoint in a simplified format and require that the associated ESFAS instrumentation be maintained operable. In addition, the design information associated with allowable values is documented in the ESFAS setpoint methodology referenced in the ESFAS TS bases. The setpoint methodology documents the design basis of the ESFAS Function allowable values, not the TS. In addition, the design information being moved from the affected allowable values specified in CTS Table 3.3-3 will be retained in the ESFAS bases for each of the associated Functions. As such, this change is also acceptable because changes to the ITS Bases are controlled by the TS Bases Control Program specified in the Administrative Controls Section of the TS. This program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because design detail is being removed from the TS.

LA.6 *(Type 3 Removing Descriptions of System Operation)* CTS Action 36 is applicable to the SI Automatic Actuation Logic ESFAS Function. The CTS Action contains a description of the P-4 interlock operation that blocks the SI Automatic Actuation Logic after SI initiation and subsequent reset. The ISTS does not contain a corresponding Action or description in the TS. The CTS is revised to conform to the ISTS. This changes the CTS by removing the description of the system design and operation from the Action and placing this information in the Bases for the SI Automatic Actuation Logic and Relays. Another L DOC addresses the elimination of the CTS #36 Action requirement. This DOC only addresses the movement of system operability requirements to the bases for that system.

The proposed change is acceptable because it is necessary to conform more closely to the ISTS and because the system operation and design information contained in CTS Action #36 is not required in the TS to ensure the operability of the associated ESFAS Function. The ITS continues to specify that the associated ESFAS instrumentation be maintained operable. The information being moved to the bases merely describes one aspect of the systems operation that will affect operability under certain circumstances. This information is based on the standard Westinghouse design of the P-4 interlock and SI block feature of that interlock. In addition, the system operation and design information being moved from the CTS Action will be retained in the ESFAS bases for the associated Function. As such, this change is also acceptable because changes to the ITS Bases are controlled by the TS Bases Control Program specified in the Administrative Controls Section of the TS. This program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because system operation and design detail is being removed from the TS.

LA.7 *(Type 3 - Removing Procedural Details for meeting Tech Spec Requirements)* Action 38 is applicable to the ESFAS Interlock Functions (i.e., P-11, and P-12). CTS Action 38 specifies the following for an affected interlock; "...determine by observation of the associated permissive annunciator window(s) (bistable status lights or computer checks) that the interlock is in its required state for the existing plant condition". The corresponding ITS Action Condition K requires the following; "verify interlock is in required state for existing unit conditions." The CTS Action is revised to conform to the ISTS. This changes the CTS by removing the specific procedural guidance explaining how to verify the interlock status (i.e., determine by observation of the associated permissive annunciator window(s) (bistable status lights or computer checks)) from the TS and placing this guidance in the associated TS Bases for the Action.

The proposed change is acceptable because the information removed from the CTS Actions is not required in the TS to ensure the affected ESFAS instrumentation is maintained operable. The TS still requires the affected instrumentation to be operable in the applicable Modes or specifies the appropriate Action to be taken in a similar manner as before. The procedural detail for completing the required actions is more appropriately contained in the bases description of the Action. The ISTS typically contains this type of information in the bases. Also, this change is acceptable because changes to the ITS Bases are controlled by the TS Bases Control Program specified in the Administrative Controls Section of the TS. This program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because procedural details are being removed from the TS.

## *Administrative Changes (A)*

A.1 In the conversion of the Beaver Valley Power Station current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering or order, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

Due to the large number of such changes, A.1 changes may not always be marked on each CTS page. Marked or unmarked, all A.1 changes are identified by a single annotation of A.1 at the top of the first page of each CTS. These changes include all non-technical modifications of requirements to provide consistency with the ISTS, including all significant format changes made to update the older NUREG-0452 Technical Specification presentation to the ISTS format. This type of change is also associated with the movement of requirements within the Technical Specifications and with changes made to the presentation of Technical Specifications requirements to combine the Unit 1 and 2 Technical Specifications into one document and highlight the differences between the Unit 1 and 2 requirements. These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS requirements.

A.2 The CTS surveillance requirements 4.3.2.1.1, 4.3.2.1.2 and 4.3.2.1.3 contain the overall surveillance requirements for the ESFAS instrument functions. CTS 4.3.2.1.1 specifies functional tests for the instrument channels, interlocks, actuation logic and relay ESFAS Functions. CTS 4.3.2.1.2 specifies the required testing for the ESFAS Interlock functions. CTS 4.3.2.1.3 contains the response time test requirement for the ESFAS Functions. In addition to the general requirements specified above, CTS Table 4.3-2 contains the specific surveillance tests associated with each ESFAS instrument function. CTS Table 4.3-2 is a separate Table for surveillance requirements that duplicates much of the information already presented for each ESFAS function in CTS Table 3.3-3. The ISTS does not include general instrument surveillance requirements that correspond to CTS 4.3.2.1.1, 4.3.2.1.2, and 4.3.2.1.3. The ISTS contains a list of all the surveillance requirements associated with each of the ESFAS instrument Functions. Each ISTS ESFAS surveillance is numbered and states a specific surveillance test requirement and performance frequency. The ISTS lists the surveillance requirements by number that are applicable to each ESFAS instrument function on one master Table (ISTS 3.3.2-1). The single ISTS Table 3.3.2-1 contains all the requirements for each ESFAS function. The list of surveillance requirements applicable to each ESFAS instrument function on ISTS Table 3.3.2-1 is different in presentation and format from the CTS general surveillances (4.3.2.1.1, 4.3.2.1.2, and 4.3.2.1.3) and CTS surveillance Table 4.3-2, but contains similar information regarding the surveillance requirements associated with each ESFAS instrument Function.

The CTS surveillance requirement presentation is revised to conform to the ISTS. This changes the CTS by eliminating the general surveillance requirements 4.3.2.1.1, 4.3.2.1.2, and 4.3.2.1.3 and the separate Surveillance Table (4.3-2). This change also includes the editorial revisions made to the corresponding Unit 1 response time testing surveillance (not shown) to change the Unit 1 CTS wording from "demonstrated" to the more common ISTS descriptive term "verified" which is also consistent with the corresponding Unit 2 surveillance.

The proposed change is acceptable because it represents a change in the format and presentation of the ESFAS surveillance requirements that is necessary to conform to the ISTS. The proposed changes consolidate the ESFAS surveillances associated with each instrument function and eliminate the repetition of requirements. Specifically, the elimination of the general surveillance requirements 4.3.2.1.1, 4.3.2.1.2, and 4.3.2.1.3 is acceptable because the technical requirements of the CTS surveillances are retained in the corresponding ISTS requirements listed in ISTS Table 3.3.1-1.

The ISTS list of surveillances for each ESFAS Function includes a specific response time surveillance requirement assigned to each ESFAS Function that has response time limits associated with it. The assignment of individual response time verification requirements to each ESFAS Function that has response time limits associated with it assures the general response time requirement in CTS 4.3.2.1.3 is preserved without technical changes. In addition, any technical changes to the detailed surveillance requirements listed on CTS Table 4.3-2 are identified and discussed in the markup of that CTS Table. Therefore, the elimination of the general surveillances described in 4.3.2.1.1, 4.3.2.1.2, and 4.3.2.1.3 and re-organization of the CTS surveillance requirements is designated an administrative change.

A.3 CTS surveillance 4.3.2.1.3 requires that response time testing be performed on the ESFAS Functions and specifies that the testing be performed on "one channel per function such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific ESF function as shown in the "Total No. of Channels" column of Table 3.3-3". The corresponding ISTS surveillance for response time testing requires that the testing be performed on a "Staggered Test Basis". The CTS is revised to conform to the ISTS. This changes the CTS by replacing the explanation of how each channel must be tested with a simple reference to the TS defined term of "Staggered Test Basis". This change also includes the editorial revisions made to the corresponding Unit 1 response time testing surveillance (not shown) to change the Unit 1 CTS wording from "tested" to the more common ISTS descriptive term "verified" which is also consistent with the corresponding Unit 2 surveillance.

The proposed change is acceptable because the CTS requirement explaining how each channel should be tested is the same as testing the channels on a staggered basis as defined in the ISTS. The proposed change is consistent with the format and presentation of this requirement in the ISTS. The ISTS requirements reference defined terms instead of repeating this information in each surveillance. The proposed change does not introduce a technical change to the CTS requirements. The specified testing interval remains the same. The proposed change simplifies the presentation of the surveillance requirement without changing the intent. Therefore, the proposed change is designated administrative.

A.4 The column headings for Functional Unit, Applicable Mode, and Action in CTS Table 3.3-3 are revised to conform to the corresponding column headings in ISTS Table 3.3.2-1. In the ISTS, the corresponding column headings are Function, Applicable Mode or Other Specified Condition, and Condition.

The proposed change is acceptable because the change in column headings on the ESFAS table represents a change in presentation only that is necessary to conform to the ISTS. Changing Functional Unit to Function is a change in title only that does not introduce a technical change to the CTS requirements. Adding "or other specified condition" to the CTS column heading for Applicable Mode provides a clarification that encompasses the CTS use of footnotes to modify the applicable Modes with additional conditions. For example, the Applicable Mode for CTS Functional Units 1.d and 1.e are modified by Note 1 which places the following condition on Mode 3; "function may be bypassed in this MODE below P-11." As such, the addition of "or other specified condition" to the CTS Applicable Mode column is consistent with the CTS use of notes to modify the applicability with additional conditions and does not represent a technical change to the CTS. Changing the CTS Table 3.3-3 column heading "Action" to "Condition" is necessary due to the format of ISTS Actions. The ISTS Actions are expressed in three separate parts i.e., a specific Condition (e.g., one channel inoperable) with an associated Required Action (e.g., place the channel in trip) and a Completion Time for that Action (e.g., 6 hours). Although the CTS Actions contain the separate components used in the ISTS example above, in the CTS, the components are combined together in a paragraph or two and simply labeled "Action". These components are physically separated in the ISTS presentation of Actions. The separation of these components provides better human factoring of the TS and allows the user to quickly identify the applicable condition and determine the requirements associated with it. As such, the change from "Action" heading to "Condition" heading is purely one of format and presentation of the same information.

The proposed changes do not involve technical changes to the CTS and are designated administrative changes.

A.5 The CTS Table 3.3-3 table heading titled "Total Number of Channels" is revised to be "Required Channels" consistent with the corresponding ISTS Table 3.3.2-1 Table headings. In addition, the Minimum Channels Operable column of CTS Table 3.3-3 is deleted consistent with the content of the corresponding ISTS Table 3.3.2-1.

The proposed change is acceptable because the revisions described above do not result in technical changes to the number of instrument channels required operable or the applicable Actions when the required channels are not met. All Actions for an inoperable instrument channel in the ISTS key off the Required Channels specified for the affected function. The new ISTS Conditions assigned to each Instrument Function will specify the appropriate action when one or more "Required" instrument channels are inoperable. The minimum channels column used in the CTS to identify the number of operable channels for which continued operation is permissible is no longer used or required in the TS. The ISTS Actions encompass the concept of the minimum required channels, i.e., the plant would be required to be placed in a Mode or Condition outside the Applicable Mode when the minimum number of channels for continued operation is not met. The ISTS Actions accomplish this without a specific reference to the minimum required channels. As such the proposed changes described above do not introduce a technical change to the CTS requirements. In addition, any technical changes to the CTS Actions associated with the ESFAS Instrument functions are identified in the markup of those Actions and addressed in the DOCs associated with the changes to the CTS Actions. This DOC is intended to address the reformat of the CTS Table 3.3-3 to conform to the corresponding ISTS Table 3.3.2-1. Therefore, this change is designated administrative.

A.6 The CTS Table 3.3-3 Allowable Value column title is revised by the addition of Unit specific designations. The corresponding ISTS Table does not include Unit specific designations. However, the BVPS specific implementation of the ISTS includes both Unit 1 and Unit 2 requirements in one set of TS. As each BVPS Unit may have different setpoints, the resulting BVPS ITS Table 3.3.2-1 is proposed with separate Unit 1 and Unit 2 Allowable Valve columns for each ESFAS function.

The proposed change is acceptable because the CTS Allowable Values are not changed. The proposed change merely combines the Unit 1 and Unit 2 Allowable Values into the same ITS ESFAS Instrument Function Table. As such, the proposed change is designated administrative.

A.7 CTS Table 3.3-3 and 4.3-2 contain the Loss of Power ESFAS Function number 6. This Function addresses the undervoltage and degraded voltage instrumentation associated with the emergency buses. The corresponding ISTS ESFAS Table 3.3.2-1 does not contain the TS requirements for this instrumentation. In the ISTS, the TS requirements for the undervoltage and degraded voltage instrumentation are located in ISTS 3.3.5 not ISTS 3.3.2. The CTS is revised to conform to the ISTS. This changes the CTS by moving the TS requirements for this instrumentation from the ESFAS TS into a separate TS, ITS 3.3.5. ITS LCO 3.3.5 is a separate TS that is intended to address the requirements for undervoltage and degraded voltage instrumentation. This change includes the movement of all requirements for this instrumentation including the Actions (#33 and #34) and the surveillance requirements on Table 4.3-2. This DOC only addresses the movement of these requirements within the TS. Any technical changes to these CTS requirements are addressed in the markups and DOCs associated with the new ITS LCO 3.3.5.

The proposed change is acceptable because the affected requirements remain within the TS. The change is necessary to conform to the format and presentation of this information in the ISTS. The re-organization of these TS requirements to conform with the ISTS does not introduce a technical change to the requirements. As the change in presentation of these TS requirements has no technical impact, the proposed change is designated administrative.

A.8 CTS Function 1.1, SAFETY INJECTION-TRANSFER FROM INJECTION TO THE RECIRCULATION MODE, is revised to be more consistent with the ISTS. The CTS Function title is revised to "Automatic Switchover to Containment Sump". The Safety Injection coincidence of the Function is moved to a separate line item. In addition, the Function is renumbered from 1.1 to 7. These changes revise the presentation of this ESFAS Function to be more consistent with the ISTS.

The CTS Function is named differently for each Unit. The individual unit names are retained in the ITS. The proposed revisions to the CTS Function are acceptable because they do not introduce technical changes to the CTS requirements and because they are necessary to make the CTS conform more closely to the ISTS.

The renaming and renumbering of the Function are editorial changes made to conform more closely with the ISTS terminology describing the Function and the position of the Function in ISTS Table 3.3.2-1. Moving the Safety Injection coincidence description to a separate line item in the Function only affects the presentation of the Function on the ESFAS Table and does not involve a technical change to the CTS requirements. Placing the Safety Injection coincidence description on a separate line makes this reference to the Safety Injection Function more consistent with the ISTS method of referencing the Safety Injection Function and more consistent with other CTS references to the Safety Injection Function.

As the proposed changes do not introduce technical changes to the CTS requirements, they are designated administrative changes.

A.9 The Allowable Values specified for the CTS Functional Unit 1.e and Functional Unit 4.d (Steamline Pressure-Low) on Table 3.3-2 are modified by a * footnote that specifies the time constants associated with the Allowable Value. In addition to the time constants (which are part of the Allowable Value) the footnote also specifies that "Channel Calibration shall ensure that these time constants are adjusted to those values." The corresponding ISTS Functions in CTS Table 3.3.2-1 do not include footnotes with requirements for the channel calibration of the function. The ISTS includes the requirement to verify the time constants associated with a Function in the Channel Calibration Surveillance Requirement for that Function. The ISTS includes notes in the channel calibration surveillance that clarify or modify the requirements for that surveillance. The CTS is revised to conform to the ISTS. This changes the CTS by moving the note affecting channel calibration from the list of functions on CTS Table 3.3-2 into the ESFAS channel calibration surveillance requirement.

The proposed change is acceptable because the change is necessary to conform to the ISTS presentation of this information, the change does not result in a technical change to the CTS requirement, and because the CTS requirement is retained within the TS. The proposed change simply re-organizes the CTS requirement consistent with the ISTS. As the proposed change does not introduce a technical change to the CTS, it is designated administrative.

A.10 The number of manual initiation instrumentation channels for the Containment Spray, Phase B Isolation, and Steam Line Isolation (Unit 2 only) ESFAS Functions are identified as "2 sets (2 switches per set)". In the ISTS, the number of channels for manual Functions that utilize dual initiation switches in two sets are identified as "2 per train, 2 trains". The CTS is revised to conform to the ISTS nomenclature. This changes the CTS by more clearly identifying the actuation train A and B relationship of the manual ESFAS instrument channels.

The proposed change is acceptable because it does not introduce a technical change to the CTS and is necessary to conform to the ISTS. The proposed change accurately describes the affected manual instrumentation consistent with the BVPS design. Each affected ESFAS Function may be actuated by either train of ESFAS. An ESFAS train may be manually actuated by operating the two train related switches at the same time. This is a standard Westinghouse deign feature to preclude a single switch operation from inadvertently initiating an ESFAS Function. As the proposed change is consistent with the BVPS design and does not introduce a technical change to the CTS, it is designated administrative.

A.11 The CTS steam pressure Functions for steam line isolation consist of Functions 4d and 4e. The corresponding ISTS Functions are organized as Functions 4.d.1 and 4.d.2. The CTS is revised to conform to the ISTS. This changes the CTS by re-organizing the steam pressure Functions under a common Function number (4.d).

The proposed change is acceptable because it does not introduce a technical change to the CTS. The proposed change only affects the presentation of the TS requirements and is made to be more consistent with the ISTS. As such, the proposed change is designated administrative.

A.12 The CTS AFW ESFAS Function is modified by Note 3. The CTS Note provides an explanation that the AFW pump manual initiation is included in the plant systems TS for the AFW pumps. The corresponding ISTS AFW ESFAS Function does not include this Note. The CTS is revised to conform to the ISTS. This changes the CTS by eliminating the explanation provided by the CTS note.

The proposed change to eliminate the CTS reference to the plant system TS for the AFW pumps is acceptable because the reference does not involve a requirement that is related to the ESFAS TS requirements. The CTS note being eliminated is informational only with no impact on the ESFAS or plant systems TS requirements. In addition, the manual initiation circuits for the AFW pumps are not part of the ESFAS system and are addressed by the plant system TS for the AFW pumps. Therefore, the CTS note is not required to ensure the operability of the ESFAS components or the AFW manual initiation circuitry and can be deleted with no technical impact to the CTS. The proposed change does not introduce a technical change to the CTS and is designated administrative.

A.13 The number of channels for several CTS ESFAS Functions for Actuation Logic and relays and the P-4 interlock are simply specified as 2 channels. The corresponding ISTS Functions are specified in terms of "trains". The CTS is revised to conform to the ISTS terminology for these Functions. This changes the CTS by identifying the ESFAS Train A and B relationship of certain Functions required operable in the TS.

The affected CTS ESFAS Functions are related to the ESFAS actuation trains and not individual instrument channels. The proposed change is acceptable because it is consistent with the BVPS ESFAS design and more accurately describes the affected Functions. In addition, the proposed change does not introduce a technical change to the CTS requirements for those Functions. The proposed change only revises the label used to describe the Function but does not change the CTS operability requirements for the affected Functions. The proposed change does not introduce a technical change to the CTS and is designated administrative.

A.14 The CTS main steam line isolation negative steam line pressure rate high Function is required operable in Mode 3. The CTS Mode 3 Applicability is modified by Note (2). Note (2) states that the trip function is automatically bypassed above P-11 and is bypassed below P-11 when Safety Injection on low steam pressure is not manually bypassed. The corresponding ISTS ESFAS Function is also modified by a Note that states that the Function is required operable in Mode 3 below the P-11 (Pressurizer Pressure) interlock. The CTS Note is revised to conform more closely to the ISTS Note. The proposed ITS Note states that the Function is required operable "Below the P-11 (Pressurizer Pressure) interlock when SI on steam line pressure low is blocked. This changes the CTS by stating the Applicability more clearly in terms of when the affected Function is required operable. The references to bypassing

Functions in the CTS Note are eliminated (consistent with the ISTS) and the Note is made to address the corresponding operability requirements (i.e., when the Function may not be bypassed).

The existing CTS Note that modifies the Mode 3 Applicability is based on the corresponding Note in the previous standard Westinghouse plant TS in NUREG-0452. The CTS Note describes the Applicability requirements in terms of when the Function is automatically or manually bypassed. The current Westinghouse plant standard TS in NUREG-1431 do not include descriptions of when the function may be bypassed and simply require the negative rate trip to be operable below P-11 (approximately 2000 psig pressurizer pressure). However, the new standard TS do not address the design feature of P-11 that only permits the negative steam line pressure rate high Function to be manually enabled at the same time the low steam line pressure SI signal is manually blocked. The two Functions do not automatically switch when decreasing plant pressure during a shutdown. Manual action is required to block the low steam pressure SI signal which also enables the negative steam line pressure rate high Function. This manual action is taken at some point below the P-11 setpoint when decreasing plant pressure during a shutdown. Therefore, the negative steam line pressure rate high Function can not be operable immediately after reaching P-11 during a plant shutdown and the ISTS Note requires operability below P-11 without an exception or condition. The CTS Applicability Note addressed this design feature and allowed for the delay necessary for bypassing the low steam line pressure SI signal before requiring the negative steam line pressure rate high Function operable below P-11. However, the CTS Note is much less clear than the proposed ITS Note. During plant startups the P-11 Function automatically enables the steam line pressure low Function and bypasses the steam line pressure negative rate high Function on increasing pressure so there is no delay and both the simple ISTS Applicability note and the proposed BVPS ITS note work.

The proposed change adopts the current Westinghouse standard TS Note style and clarity while retaining the CTS allowance for the delay necessary for manual Action necessary to make the negative steam line pressure rate high Function operable after reaching P-11 during a plant shutdown. The proposed change does not introduce a technical change to the corresponding CTS Note. The operability requirements for the Function remain the same. The proposed change represents a clarification of the CTS Note that is consistent with the ISTS presentation of Applicability Notes (i.e., more simply stating the operability requirements for the affected Function). As such, the proposed change is consistent with the ISTS style of Applicability Notes while retaining the additional CTS condition for operability (the delay for manual action). Therefore, the proposed change does not adversely affect the safe operation of the plant and continues to assure the plant is operated consistent with the plant design and assumptions of the safety analyses. The proposed change is designated administrative because no technical change was introduced to the CTS operability requirements for this Function.

A.15 The CTS Actions specify "With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement...." or "With the number of channels OPERABLE one less than required by the Total Channels OPERABLE requirement...." These CTS Actions are based on the minimum channels operable or total channels specified in CTS Table 3.3-3 for each ESFAS Function. The ISTS does not contain a "minimum channels operable" or "total channels" requirement. The ISTS uses the single term "Required" channels or trains for all ESFAS Functions.

In the ISTS, all Actions are based on one or more "Required" channels or trains inoperable. The ISTS Required Channels is equivalent to the CTS Total Channels requirement. The CTS is revised to conform to the ISTS. This changes the CTS by eliminating the Action references to the Minimum or Total channels operable and simply specifying "one channel inoperable". In some cases, the ITS Action Conditions are specific to a single ESFAS Function and may contain the Function name (e.g., one Containment Pressure channel inoperable). In addition, the ISTS Action Conditions may identify the ESFAS Function by "train" instead of by "channel" where applicable (e.g., the automatic actuation logic and Actuation Relays Function is not a channel and is referred to by the more accurate train designation).

The proposed change is acceptable because the number of channels (or trains) on which the CTS Actions are based is not changed. The ISTS Required Channels is equivalent to the CTS Total Channels requirement. In cases where the CTS Action is based on the Minimum Channels requirement, the Minimum Channels requirement is equivalent to the CTS Total Channels Requirement. Therefore, the ISTS use of Required Channels simplifies the CTS presentation of this information without introducing a technical change to the number of channels used for initiating an Action requirement. The use of the term trains in the ISTS for certain Functions is also acceptable as it more accurately identifies the associated ESFAS Functions that are designed with train A and train B systems and that are technically not instrumentation channels (e.g., automatic actuation logic).

The CTS Minimum Channels requirement is also used within an Action statement where the continued operation of the plant is permitted "providing the Minimum Channels operable requirement is met". The ISTS does not use this convention to indicate where continued operation is permitted. If an Action exists in the ISTS for a specific Condition, operation may continue in accordance with that Action. However, if an Action is not included in the ISTS for a specific condition (e.g., an ESFAS Function with two required channels inoperable), LCO 3.0.3 must be entered and the plant placed in a condition where the ESFAS Function is no longer required. Therefore, the proposed change to eliminate the phrase "operation may continue" from the CTS Actions is also acceptable.

The ISTS format, presentation and conventions of use have eliminated the need for the CTS Action references to "Total Channels" or "Minimum Channels" and such phrases as "operation may continue" without introducing technical changes to the number of channels required to be operable by the ESFAS TS or the conditions under which continued operation is permitted. As the proposed changes involve revisions to the format and presentation of the CTS Action requirements without introducing technical changes to those requirements, the changes are designated administrative.

A.16 The CTS Actions provide the allowance that "one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.1...." The corresponding ISTS Action Condition C Note states that "one channel may be bypassed for up to 4 hours for surveillance testing." The CTS is revised to conform to the ISTS Condition Note. This changes the CTS by eliminating the reference to Specification 4.3.2.1.1 from the affected CTS Actions. Where applicable, changes in terminology (e.g., channel to train) are addressed in other DOCs.

CTS Specification 4.3.2.1.1 states the surveillance requirements applicable to the ESFAS Functions. The surveillance requirements of 4.3.2.1.1 may have to be performed on the ESFAS instrumentation while operating in the applicable Mode where the ESFAS Function is required operable. Surveillance testing of instrument channels or trains requires that the channel or train be placed in the trip condition at some point during testing to verify correct channel operation. In the case of ESFAS Functions such as the automatic actuation logic and relays, placing the train or relay in trip could cause an inadvertent actuation of one of the safety features. In cases where one channel of a Function is already placed in trip to meet Action requirements, placing another channel in trip for test purposes may result in an inadvertent ESFAS actuation. Therefore, the CTS contains the allowance to bypass a channel for a limited time to allow the required surveillance testing to be performed without causing a safety feature actuation.

The proposed change is acceptable because it accomplishes the same thing as the CTS requirement and does not introduce a technical change to the CTS requirements. The inclusion of a reference to the specific surveillance (4.3.2.1.1) is not required to ensure the ESFAS Function is properly tested without causing an inadvertent safety feature actuation. The ISTS Action Note accomplishes this task with a simpler presentation that is consistent with the intent of the CTS requirement. The proposed change is designated administrative because no technical change is made to the CTS requirements.

A.17 The CTS ESFAS TS contains a separate Table (4.3-2) that contains the surveillance requirements associated with each ESFAS Function. In addition to the ESFAS Function surveillance requirements, CTS Table 4.3-2 contains a list of the ESFAS Functions and the Applicable Modes for each ESFAS Function. The List of Functions and Applicable Modes in CTS Table 4.3-2 is essentially redundant to the list of ESFAS Functions and Applicable Modes in CTS Table 3.3-3. The purpose of CTS Table 4.3-2 is to clearly specify the surveillance requirements associated with each ESFAS Function. The repetition of the ESFAS Function titles and Applicable Modes in Table 4.3-2 is for convenience and ease of identification. The repetition of this information on CTS Table 4.3-2 is not intended to introduce technical changes to the corresponding requirements in CTS Table 3.3-3.

In order to simplify and consolidate the ESFAS Function requirements, the corresponding ISTS for ESFAS presents all the ESFAS requirements in a single Table (3.3.2-1). ISTS Table 3.3.2-1 contains a single list of ESFAS Functions and a single list of Applicable Modes for each Function. The CTS is revised to conform to the ISTS. This changes the CTS by consolidating CTS Tables 3.3.3 and 4.3.2 into a single Table (ITS 3.3.2-1). The essential technical content of Table 4.3-2 (the surveillance requirements) is moved into the consolidated ITS Table. This DOC is intended to address the consolidation of the two CTS Tables and addresses the redundant list of Function titles and Applicable Modes for which the changes have already been described in the markup of CTS Table 3.3-3. Other DOCs address any technical differences between the consolidated ISTS Table and CTS Table 4.3-2.

The proposed change is acceptable because it conforms to the ISTS and because it does not introduce technical changes to the CTS requirements. The proposed change consolidates the ESFAS requirements in one table. The ESFAS information addressed by this DOC is redundant to the information contained in CTS Table 3.3-3. Technical changes to the ESFAS requirements affected by this DOC have already been identified and discussed in the markup of CTS Table 3.3-3. As such, the proposed change only affects the format and presentation of the ESFAS requirements and does not introduce technical changes to those requirements. As the proposed change involves only the format and presentation of the ESFAS requirements, it is designated administrative.

A.18 CTS Table 4.3-2 contains the surveillance requirements for the ESFAS Functions. The CTS specifies a Channel Functional Test for certain ESFAS Functions. In place of the Channel Functional Test, the ISTS specifies the following surveillance tests depending on the Function:

Channel Operational Test (COT),

Trip Actuating Device Operational Test (TADOT),

Actuation Logic Test,

Master Relay Test, and

Slave Relay Test

The CTS is revised to replace the single Channel Functional Test requirement with the new ISTS defined test requirements. The CTS Channel Functional Test as well as the new ISTS surveillance tests are defined terms specified in Section 1.0 of the TS. The addition of the new ISTS defined terms for surveillance testing and the changes to the CTS Channel Functional Test are addressed in the changes made to TS Section 1.0, Definitions. Any technical changes to the requirements for individual ESFAS Functions will be addressed in the detailed markup of those requirements in CTS Table 4.3-2. This DOC is intended to address the replacement of the Channel Functional Test requirement in Table 4.3-2 with the new ISTS test terms. Unless another technical difference is involved the single Channel Functional Test specified on CTS Table 4.3-2 will be replaced by the appropriate ITS surveillance number(s) with no other DOC identified.

The ISTS COT is intended to address those ESFAS instrument channels that encompass equipment intended to process the source signal (e.g., convert current input to voltage output). The ISTS TADOT is intended to address those ESFAS instrument channels that consist of a more simple input such as a manual switch or other device that simply opens or closes contacts in the ESFAS. The COT and TADOT are used to replace the CTS Channel Functional Test for individual instrument channel Functions other than the Automatic Actuation Logic and Actuation Relay Functions. The Actuation Logic Test , Master Relay Test, and Slave Relay Test are all associated with the Automatic Actuation Logic and Actuation Relay Functions. The ISTS Actuation Logic Test is intended to address the actuation logic in the ESFAS where the individual instrument channel inputs are combined to produce the required logic output. The Master Relay Test is normally accomplished in conjunction with the Actuation Logic Test via the same test panel. The Master and Slave relay tests address the testing of the Solid State Protection System output relays that are initiated by the Actuation Logic. The CTS Channel Functional Test is currently utilized to address testing all these different ESFAS components. Although the ESFAS Functions can be adequately tested using a single general test definition such as the Channel Functional Test, some interpretation of the Channel Functional Test definition is necessary to adequately address the different ESFAS Functions. The specific ISTS test definitions provide accurate descriptions of the testing that is actually performed on each type of ESFAS Function.

The proposed change is acceptable because the new test terms contain specific test requirements applicable to the ESFAS Functions that more accurately describe the required testing for each Function. The proposed change does not introduce a technical change to the method by which each type of Function is currently tested (standard Westinghouse plant solid state protection system test panels are typically used for Actuation Logic, Master and Slave Relay testing). The proposed change only results in the use of defined terms that more accurately describe the current test method for each ESFAS Function. As such, the ESFAS Functions continue to be tested in a similar manner as before but the testing being performed is more consistent with the TS defined terms being used to specify the required testing. The proposed change is designated administrative because it does not introduce technical changes to the surveillance testing currently performed for each ESFAS Function.

A.19 CTS surveillance 4.3.2.1.3 requires that "The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESF function shall be demonstrated to be within its limit...." The CTS surveillance is a general requirement that is interpreted to be applicable to those ESFAS Functions with response time limits assumed in the safety analyses. The list of ESFAS Functions with response time requirements that must be verified is maintained outside of the TS in the Licensing Requirements Manual (LRM). The ISTS provides a specific response time surveillance requirement that is assigned to each ESFAS Function that has required response time limits. The CTS is revised to conform to the ISTS. This changes the CTS by assigning a response time surveillance requirement to each individual ESFAS Function that has a required response time limit identified in the LRM.

The proposed change is acceptable because it more accurately identifies the ESFAS Functions with response time requirements and assures each of those Functions are assigned the response time surveillance requirement. The proposed change revises the presentation of the requirement to perform response time verification but does not change the intent of the requirement. In addition, the proposed change does not change the ESFAS Functions that are tested, the method of testing, or the frequency of testing. As such, the proposed change does not introduce any technical changes to the CTS. Therefore, the proposed change is designated administrative.

A.20 CTS Note 1 in Table 4.3-2 is applicable to the monthly frequency specified for the Automatic Actuation Logic Function. CTS Note 1 specifies that each train or logic channel shall be tested at least every other 31 days. The corresponding ITS surveillances for the automatic actuation logic Function (SR 3.3.2.2 and SR 3.3.2.3) specify that the surveillance be performed every 31 days on a Staggered Test Basis. The CTS is revised to conform to the ISTS. This changes the CTS by eliminating Table 4.3-2 Note 1 and replacing the Note with a surveillance Frequency that specifies the surveillance be performed on a "Staggered Test Basis".

The proposed change is acceptable because it does not change the time interval in which each train of actuation logic must be tested. The CTS requires each train to be tested every other 31 days. The ISTS specifies every 31 days on a "Staggered Test Basis". The use of the defined term Staggered Test Basis results in exactly the same surveillance frequency (each train every other 31 days) as the CTS. Defined terms are explained once in Section 1.0 of the TS. The ISTS convention for this type of surveillance is to use the defined term instead of including an explanation in each affected surveillance frequency. As such, the proposed change does not introduce a technical change to the CTS and only involves the adoption of the ISTS format and presentation of this information. Therefore, the proposed change is designated administrative.

A.21 Unit 1 only. The Unit 1 CTS allowable value for the steam line pressure Function specifies the pressure with the description that the pressure is steam line pressure. The corresponding ISTS (and Unit 2) allowable values simply specify the required pressure. The Unit 1 CTS is revised to conform to the ISTS (and Unit 2 CTS). This changes the Unit 1 CTS by eliminating the description of the specified pressure as steam line pressure.

The affected ESFAS Function is clearly labeled as steam line pressure. Therefore, the additional description of that function's allowable value as steam line pressure is redundant and unnecessary to identify what pressure is required in the TS. As such, the proposed change is acceptable because deletion of the descriptive material associated with the steam line pressure allowable value does not introduce a technical change to the CTS requirements for steam line pressure. The setpoint remains unchanged and continues to be clearly identified by the ESFAS Function title. The proposed change is necessary to conform to the presentation of this information in the ISTS and does not otherwise reduce or alter the CTS requirements for this ESFAS Function. Therefore, the proposed change is designated administrative.

A.22 Unit 1 only. The Unit 1 CTS ESFAS Function 7a, Steam Generator (SG) Water Level - Low - Low, start of the AFW pumps is modified by reference to a "Loop Stop Valves Open" permissive. The corresponding ISTS and Unit 2 CTS ESFAS Functions do not contain a similar reference. The Unit 1 CTS is revised to conform to the ISTS and Unit 2 CTS. This changes the Unit 1 ESFAS Function 7a by deleting the reference to the "Loop Stop Valves Open" permissive.

The Unit 1 ESFAS Function for low-low SG level was originally designed with a permissive interlock with the RCS loop stop valves. The original intent of this design was to defeat the SG low level trip for a SG when the associated RCS loop was removed from service. This design would permit the water level in a SG removed from service to be below the low-low level setpoints without actuating the ESFAS Function (AFW pump start) and allow continued plant operation with only two RCS loops in service. BVPS never licensed two loop operation and the permissive interlock with the RCS loop stop valves was removed by a plant design change. In addition, the CTS and proposed ITS require that all three RCS loops be in operation when the low-low SG Water level ESFAS Function is required operable. As such, the reference to the permissive interlock with the RCS loop stop valves no longer has a technical impact in the TS. The proposed change to delete the reference to this permissive interlock from the Unit 1 ESFAS TS is acceptable because the permissive interlock with the RCS loop stop valves is no longer part of the Unit 1 design and because the TS require that all three RCS loops be in service when this ESFAS Function is required operable. The proposed change makes the CTS conform more closely to the current plant design and does not result in a technical impact to the CTS requirements. As such, the proposed change is designated administrative.

ENCLOSURE 4

DETERMINATIONS OF
*NO SIGNIFICANT HAZARDS CONSIDERATION (NSHC)*
FOR
CHANGES MADE TO THE BVPS
CURRENT TECHNICAL SPECIFICATIONS (CTS)

Introduction
The determinations of NSHC contained within this Enclosure consist of two general types. This enclosure contains "Generic" NSHC developed for the categories of change identified in Enclosure 3 (Changes to the CTS) and "Specific" NSHC for those "Less Restrictive" changes that do not fit within one of the generic determinations of NSHC listed below. Each specific NSHC is identified by the associated Technical Specification and discussion of change (DOC) number from Enclosure 3.

Enclosure Contents

Generic Determinations of NSHC



*Specific Determinations of NSHC*

None

NO SIGNIFICANT HAZARDS DETERMINATION
FOR

***ADMINISTRATIVE CHANGES***

The Beaver Valley Power Station (BVPS) is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve reformatting, renumbering, and rewording of Technical Specifications with no change in intent. These changes, since they do not involve technical changes to the Technical Specifications, are administrative.

This type of change is associated with the movement of requirements within the Technical Specifications, or with the modification of wording or format that does not affect the technical content of the current Technical Specifications. In addition, these changes include all non-technical modifications of requirements to provide consistency with the ISTS in NUREG-1431. Administrative changes do not add, delete, or relocate any technical requirements of the current Technical Specifications.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change involves reformatting, renumbering, and rewording the existing Technical Specifications. The reformatting, renumbering, and rewording process involves no technical changes to the existing Technical Specifications. As such, this change is administrative in nature and does not affect initiators of analyzed events or assumed mitigation of accident or transient events. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or changes in methods governing normal plant operation. The proposed change will not impose any new or eliminate any old requirements. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **Does this change involve a significant reduction in a margin of safety?**

   The proposed change will not reduce a margin of safety because it has no effect on any safety analyses assumptions. This change is administrative in nature. Therefore, the change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR

***MORE RESTRICTIVE CHANGES***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve adding more restrictive requirements to the existing Technical Specifications by either making current requirements more stringent or by adding new requirements that currently do not exist.

These changes include such things as additional commitments that decrease allowed outage times, increase the frequency of surveillances, impose additional surveillances, increase the scope of specifications to include additional plant equipment, increase the applicability of specifications, or provide additional actions. These changes are generally made to conform to the ISTS in NUREG-1431 and are only included in the Technical Specifications when they serve to enhance the safe operation of the plant and are consistent with the applicable plant specific design basis and safety analysis assumptions.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change provides more stringent requirements for operation of the facility. These more stringent requirements do not result in operation that will increase the probability of initiating an analyzed event and do not alter assumptions relative to mitigation of an accident or transient event. The more restrictive requirements continue to ensure process variables, structures, systems, and components are maintained consistent with the safety analyses and licensing basis. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or changes in methods governing normal plant operation. The proposed change does revise Technical Specification requirements. However, these changes are consistent with the assumptions in the safety analyses and licensing basis. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
**MORE RESTRICTIVE CHANGES**
(continued)

3. **Does this change involve a significant reduction in a margin of safety?**

   The imposition of more restrictive requirements either has no effect on or increases the margin of plant safety. Each change in this category is, by definition, providing additional restrictions to enhance plant safety. The change maintains requirements within the safety analyses and licensing basis. Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR

***RELOCATED SPECIFICATIONS***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve relocating existing Technical Specification LCOs to licensee controlled documents.

FirstEnergy Nuclear Operating Company has evaluated the current Technical Specifications using the criteria set forth in 10 CFR 50.36. Specifications identified by this evaluation that did not meet the retention requirements specified in the regulation are not included in the ISTS conversion submittal. These specifications have been relocated from the current Technical Specifications to an appropriate licensee controlled document.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change relocates requirements and surveillances for structures, systems, components or variables that do not meet the criteria of 10 CFR 50.36 (c)(2)(ii) for inclusion in Technical Specifications as identified in the Application of Selection Criteria to the Beaver Valley Technical Specifications. The affected structures, systems, components or variables are not assumed to be initiators of analyzed events and are not assumed to mitigate accident or transient events. The requirements and surveillances for these affected structures, systems, components or variables will be relocated from the Technical Specifications to an appropriate administratively controlled document which will be maintained pursuant to 10 CFR 50.59. As such, the relocation of requirements will only affect the level of regulatory control applicable to changes to the requirements. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or change in the methods governing normal plant operation. The proposed change will not impose or eliminate any requirements and adequate control of existing requirements will be maintained. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
**RELOCATED SPECIFICATIONS**
(continued)

3. **Does this change involve a significant reduction in a margin of safety?**

The proposed change does not reduce a margin of safety. The affected requirements are not being changed and are not specific assumptions of any design basis safety analysis, as indicated by the fact that the requirements do not meet the 10 CFR 50.36 criteria for retention in the Technical Specifications. The affected requirements are relocated without change and any future changes to these requirements will be evaluated per 10 CFR 50.59. The provisions of 10 CFR 50.59 provide adequate assurance that future changes to the relocated material will not affect the safe operation of the plant. In addition, the proposed change is consistent with the application of the 10 CFR 50.36 criteria endorsed by the NRC, which provides additional assurance that the proposed change will not adversely affect the safe operation of the plant. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
***LESS RESTRICTIVE CHANGES -***

***REMOVED DETAIL***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve moving details out of the Technical Specifications and into the Technical Specifications Bases, the Updated Final Safety Analyses Report (UFSAR), the Licensing Requirements manual (LRM) or other documents under regulatory control such as the Quality Assurance Program. The removal of this information is considered to be less restrictive because the Technical Specification change process no longer controls the information. Typically, the affected information is descriptive detail and the removal of this information conforms to the NRC approved content and format of the ISTS in NUREG-1431.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change relocates certain details from the Technical Specifications to other documents under regulatory control. The Technical Specification Bases, UFSAR, and Licensing Requirement Manual will be maintained in accordance with 10 CFR 50.59. In addition to 10 CFR 50.59 provisions, the Technical Specification Bases are subject to the change control provisions in the Administrative Controls Chapter of the Technical Specifications. The UFSAR is subject to the change control provisions of 10 CFR 50.71(e). Other documents used to contain the removed information are subject to controls imposed by Technical Specifications or regulations. As such, the relocation of descriptive details will only affect the level of regulatory control applicable to changes to the information moved. Changes to the affected information will continue to be evaluated in accordance with 10 CFR 50.59. As such, no significant increase in the probability or consequences of an accident previously evaluated will result. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operations. The proposed change will not impose or eliminate any requirements, and adequate control of the information will be maintained. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
**LESS RESTRICTIVE CHANGES - REMOVED DETAIL**
(continued)

3. **Does this change involve a significant reduction in a margin of safety?**

The proposed change will not reduce a margin of safety because it has no effect on any safety analysis assumptions. In addition, the descriptive details to be moved from the Technical Specifications to other documents are not being changed. Since any future changes to these details will be evaluated under the applicable regulatory change control mechanism, no significant reduction in a margin of safety will be allowed. A significant reduction in the margin of safety is not associated with the elimination of the 10 CFR 50.92 requirement for NRC review and approval of future changes to the relocated details. The proposed change provides consistency with the level of detail in the Westinghouse Standard Technical Specifications, NUREG-1431, issued and approved by the NRC Staff, which provides additional assurance that the proposed change has been evaluated and determined not to introduce a significant reduction in the margin of safety. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR

***LESS RESTRICTIVE CHANGES***
CATEGORY 1

***RELAXATION OF LCO REQUIREMENTS***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve relaxation of the current Technical Specification (CTS) Limiting Conditions for Operation (LCOs) such as the elimination of specific items from the LCO or Tables referenced in the LCO, or the addition of exceptions to the LCO.

These changes reflect the ISTS approach to provide LCO requirements that specify the protective conditions that are required to meet safety analysis assumptions for required features. These conditions replace the lists of specific devices used in the CTS to describe the requirements needed to meet the safety analysis assumptions. The ISTS also includes LCO Notes that allow exceptions to the LCO for the performance of testing or other operational needs. The ISTS provides the protection required by the safety analysis and provides flexibility for meeting the conditions without adversely affecting operations since equivalent features are required to be OPERABLE. The proposed changes may also be consistent with the current licensing basis, as identified in the discussion of individual changes. These changes are generally made to conform to NUREG-1431 or more accurately reflect the current licensing basis and have been evaluated to not be detrimental to plant safety.

The proposed changes are acceptable because they have been determined to be applicable to the BVPS design and consistent with the assumptions of the BVPS safety analyses. The effect of each change relative to the safe operation of the plant was evaluated in the discussion associated with the change. In addition, the proposed changes that are consistent with the ISTS have been previously evaluated by Westinghouse Electric Corp., the Westinghouse Owners Group, NEI, and the NRC in developing the ISTS and found not to adversely affect the safe operation of Westinghouse plants. In the Final Policy Statement on Technical Specification Improvements for Nuclear Power Reactors (58 FR 39132, 7/22/93), the NRC encourages licensees to update their Technical Specifications consistent with their vendor-specific ISTS and endorses the implementation of these new Technical Specifications by stating that implementation of the ISTS is expected to produce an improvement in the safety of nuclear power plants. Furthermore, the provisions of the ISTS have been adopted by many Westinghouse plants over the last 10 years. The combined operating experience of the plants that have implemented the ISTS also serves to demonstrate that the provisions of the ISTS do not adversely affect the safe operation of Westinghouse plants.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 1
**RELAXATION OF LCO REQUIREMENTS**
(continued)

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

The proposed change provides less restrictive LCO requirements for operation of the facility. The effect of the change relative to the safe operation of the plant was evaluated in the discussion associated with the change. The change has been determined not to adversely affect the safe operation of the plant. In addition, changes that are consistent with the ISTS have been previously evaluated and found not to adversely affect the safe operation of Westinghouse plants. Based on the conclusions of the plant specific evaluation associated with the change and the evaluation performed in developing the ISTS, the proposed change does not result in operating conditions that will significantly increase the probability of initiating an analyzed event. In addition, the proposed change was evaluated to assure that it does not alter the safety analysis assumptions relative to mitigation of an accident or transient event and that the resulting requirements continue to ensure the necessary process variables, structures, systems, and components are maintained operable consistent with the safety analyses. As such the proposed change also does not result in operating conditions that will significantly increase the consequences of an analyzed event. Therefore, the change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. The proposed change does impose different requirements. However, the change is consistent with the assumptions in the safety analyses and licensing basis. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **Does this change involve a significant reduction in a margin of safety?**

The effect of the change relative to the safe operation of the plant was evaluated in the discussion associated with the change. The change has been determined not to adversely affect the safe operation of the plant. In addition, changes that are consistent with the ISTS have been previously evaluated and found not to adversely affect the safe operation of Westinghouse plants. Based on the conclusions of the plant specific evaluation associated with each change and the evaluation performed in developing the ISTS, the change has been determined to maintain plant operation within the assumptions of the applicable safety analyses. As such, the change does not result in operating conditions that significantly reduce any margin of safety. Therefore, the change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 2

***RELAXATION OF APPLICABILITY***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve relaxation of the applicability of current Technical Specification (CTS) Limiting Conditions for Operation (LCOs) by reducing the conditions under which the LCO requirements must be met.

Technical Specification Applicability can be specific defined terms of reactor conditions or more general (e.g., all MODES or any operating MODE). Such generalized applicability conditions are not contained in ISTS, therefore the ISTS eliminates such Applicability requirements replacing them with ISTS defined MODES or specific reactor or plant conditions that are consistent with the safety analysis assumptions for operability of the required features.

Applicability requirements may also be eliminated during conditions for which the safety function of the specified safety system is met because the feature is performing its intended safety function (e.g. actuation instrumentation may no longer be required for an isolation valve already in its required safety position). Deleting applicability requirements that are indeterminate or that are inconsistent with the application of accident analyses assumptions is acceptable because when LCOs cannot be met, the Technical Specifications may be satisfied by exiting the applicability which takes the plant out of the conditions that require the safety system to be OPERABLE.

These changes provide the protection required by the safety analysis and provide flexibility for meeting limits by restricting the application of the limits to the conditions assumed in the safety analyses. The proposed changes may also be consistent with the current licensing basis, as identified in the discussion of individual changes. These changes are generally made to conform to NUREG-1431 or more accurately reflect the current licensing basis and have been evaluated to not be detrimental to plant safety.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 2
**RELAXATION OF APPLICABILITY**
(continued)

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

The proposed change relaxes the conditions under which the LCO requirements for operation of the facility must be met. These less restrictive applicability requirements for the LCOs do not result in operation that will increase the probability of initiating an analyzed event and do not alter assumptions relative to mitigation of an accident or transient event in that the requirements continue to ensure that process variables, structures, systems, and components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. The proposed change does impose different requirements. However, the requirements are consistent with the assumptions in the safety analyses and licensing basis. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **Does this change involve a significant reduction in a margin of safety?**

The relaxed applicability of LCO requirements does not involve a significant reduction in the margin of safety. This change has been evaluated to ensure that the LCO requirements are applied in the MODES and specified conditions assumed in the safety analyses and licensing basis. Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 3

***RELAXATION OF COMPLETION TIME***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve relaxation of the Completion Times for Required Actions in the current Technical Specifications (CTS).

Upon discovery of a failure to meet a Limiting Condition for Operation (LCO), the ISTS specifies times for completing Required Actions of the associated Technical Specification Conditions. Required Actions of the associated Conditions are used to establish remedial measures that must be taken within specified Completion Times (referred to as Allowed Outage Times (AOTs) in the CTS). These times define limits during which operation in a degraded condition is permitted. Adopting Completion Times from the ISTS is acceptable because the Completion Times take into account the operability status of the redundant systems of required features, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a design basis accident occurring during the repair period. In addition, the ISTS provides consistent Completion Times for similar conditions. These changes are generally made to conform to NUREG-1431 and have been evaluated to not be detrimental to plant safety.

The effect of each change relative to the safe operation of the plant was evaluated in the discussion associated with the change. In addition, the proposed changes that are consistent with the ISTS have been previously evaluated by Westinghouse Electric Corp., the Westinghouse Owners Group, NEI, and the NRC in developing the ISTS and found not to adversely affect the safe operation of Westinghouse plants. In the Final Policy Statement on Technical Specification Improvements for Nuclear Power Reactors (58 FR 39132, 7/22/93), the NRC encourages licensees to update their Technical Specifications consistent with their vendor-specific ISTS and endorses the implementation of these new Technical Specifications by stating that implementation of the ISTS is expected to produce an improvement in the safety of nuclear power plants. Furthermore, the provisions of the ISTS have been adopted by many Westinghouse plants over the last 10 years. The combined operating experience of the plants that have implemented the ISTS also serves to demonstrate that the provisions of the ISTS do not adversely affect the safe operation of Westinghouse plants.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 3
**RELAXATION OF COMPLETION TIME**
(continued)

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change provides a less restrictive Completion Time for a Required Action. The effect of the change relative to the safe operation of the plant was evaluated in the discussion associated with the change. The change has been determined not to adversely affect the safe operation of the plant. Required Actions and their associated Completion Times are not initiating conditions for any accident previously evaluated. In addition, changes that are consistent with the ISTS have been previously evaluated and found not to adversely affect the safe operation of Westinghouse plants or the initiation of any accident previously evaluated. Based on the conclusions of the plant specific evaluation associated with the change and the evaluation performed in developing the ISTS, the proposed change does not result in operating conditions that will significantly increase the probability of initiating an analyzed event. In addition, the proposed change was evaluated to assure that it does not alter the safety analysis assumptions relative to mitigation of an accident or transient event and that the resulting requirements continue to ensure the necessary process variables, structures, systems, and components are maintained operable consistent with the safety analyses or that the plant is placed in an operating Mode where the process variable, structure, system, or component is no longer required operable. The consequences of an analyzed accident during the relaxed Completion Time are the same as the consequences during the existing Completion Time (i.e., initial plant conditions are the same). As a result, the consequences of any accident previously evaluated are not significantly increased. As such, the proposed change also does not result in operating conditions that will significantly increase the consequences of an analyzed event. Therefore, the change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the method governing normal plant operation. The Required Actions and associated Completion Times in the ISTS have been evaluated to ensure that no new accident initiators are introduced. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 3
**RELAXATION OF COMPLETION TIME**
(continued)

3. **Does this change involve a significant reduction in a margin of safety?**

The effect of the change relative to the safe operation of the plant was evaluated in the discussion associated with the change. The change has been determined not to adversely affect the safe operation of the plant. In addition, changes that are consistent with the ISTS have been previously evaluated and found not to adversely affect the safe operation of Westinghouse plants. Based on the conclusions of the plant specific evaluation associated with each change and the evaluation performed in developing the ISTS, the change has been determined to maintain plant operation within the assumptions of the applicable safety analyses. As such, the change does not result in operating conditions that significantly reduce any margin of safety. *Therefore, the change does not involve a significant reduction in a margin of safety.*

## NO SIGNIFICANT HAZARDS DETERMINATION FOR LESS RESTRICTIVE CHANGES – CATEGORY 4

### *RELAXATION OF REQUIRED ACTION*

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve relaxation of the Required Actions in the current Technical Specifications (CTS).

Upon discovery of a failure to meet a Limiting Condition for Operation (LCO), the ISTS specifies Required Actions to complete for the associated Conditions. Required Actions of the associated Conditions are used to establish remedial measures that must be taken in response to the degraded conditions. These actions minimize the risk associated with continued operation while providing time to repair inoperable features. Some of the Required Actions are modified to place the plant in a MODE in which the LCO does not apply. Adopting Required Actions from the ISTS is acceptable because the Required Actions take into account the operability status of redundant systems of required features, the capacity and capability of the remaining features, and the compensatory attributes of the Required Actions as compared to the LCO requirements. These changes are generally made to conform to NUREG-1431 and have been evaluated to not be detrimental to plant safety.

The effect of each change relative to the safe operation of the plant was evaluated in the discussion associated with the change. In addition, the proposed changes that are consistent with the ISTS have been previously evaluated by Westinghouse Electric Corp., the Westinghouse Owners Group, NEI, and the NRC in developing the ISTS and found not to adversely affect the safe operation of Westinghouse plants. In the Final Policy Statement on Technical Specification Improvements for Nuclear Power Reactors (58 FR 39132, 7/22/93), the NRC encourages licensees to update their Technical Specifications consistent with their vendor-specific ISTS and endorses the implementation of these new Technical Specifications by stating that implementation of the ISTS is expected to produce an improvement in the safety of nuclear power plants. Furthermore, the provisions of the ISTS have been adopted by many Westinghouse plants over the last 10 years. The combined operating experience of the plants that have implemented the ISTS also serves to demonstrate that the provisions of the ISTS do not adversely affect the safe operation of Westinghouse plants.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 4
**RELAXATION OF REQUIRED ACTION**
(continued)

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

The proposed change provides less restrictive Required Actions for operation of the facility. The effect of the change relative to the safe operation of the plant was evaluated in the discussion associated with the change. The change has been determined not to adversely affect the safe operation of the plant. Required Actions are not initiating conditions for any accident previously evaluated. In addition, changes that are consistent with the ISTS have been previously evaluated and found not to adversely affect the safe operation of Westinghouse plants. Based on the conclusions of the plant specific evaluation associated with the change and the evaluation performed in developing the ISTS, the proposed change does not result in operating conditions that will significantly increase the probability of initiating an analyzed event. The proposed change was also evaluated to assure that it does not alter the safety analysis assumptions relative to mitigation of an accident or transient event and that the resulting requirements continue to ensure the necessary process variables, structures, systems, and components are maintained operable consistent with the safety analyses or that the plant is placed in an operating Mode where the process variable, structure, system, or component is no longer required operable. In addition, the proposed change provides the appropriate remedial actions to be taken in response to the degraded condition considering the operability status of the redundant systems of required features, and the capacity and capability of remaining features while minimizing the risk associated with continued operation. As such the proposed change also does not result in operating conditions that will significantly increase the consequences of an analyzed event. Therefore, the change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. The Required Actions in the ISTS have been evaluated to ensure that no new accident initiators are introduced. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 4
**RELAXATION OF REQUIRED ACTION**
(continued)

3. **Does this change involve a significant reduction in a margin of safety?**

The effect of the change relative to the safe operation of the plant was evaluated in the discussion associated with the change. The change has been determined not to adversely affect the safe operation of the plant. In addition, changes that are consistent with the ISTS have been previously evaluated and found not to adversely affect the safe operation of Westinghouse plants. Based on the conclusions of the plant specific evaluation associated with each change and the evaluation performed in developing the ISTS, the change has been determined to maintain plant operation within the assumptions of the applicable safety analyses. As such, the change does not result in operating conditions that significantly reduce any margin of safety. Therefore, the change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 5

***DELETION OF SURVEILLANCE REQUIREMENT***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve deletion of Surveillance Requirements in the current Technical Specifications (CTS).

The CTS require safety systems to be tested and verified Operable prior to entering applicable operating conditions. The ISTS eliminates unnecessary CTS Surveillance Requirements that do not contribute to verification that the equipment used to meet the Limiting Condition for Operation (LCO) can perform its required functions. Therefore, appropriate equipment continues to be tested in a manner and at a frequency necessary to give confidence that the equipment can perform its assumed safety function. These changes are generally made to conform to NUREG-1431 and have been evaluated to not be detrimental to plant safety.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change deletes Surveillance Requirements. Surveillances are not initiators to any accident previously evaluated. Consequently, the probability of an accident previously evaluated is not significantly increased. The equipment specified in the LCO is still required to be OPERABLE and capable of performing the accident mitigation functions assumed in the accident analysis. As a result, the consequences of any accident previously evaluated are not significantly affected. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. The remaining Surveillance Requirements are consistent with industry practice and are considered to be sufficient to prevent the removal of the subject Surveillances from creating a new or different type of accident. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 5
**DELETION OF SURVEILLANCE REQUIREMENT**
(continued)

3. **Does this change involve a significant reduction in a margin of safety?**

The deleted Surveillance Requirements do not result in a significant reduction in the margin of safety. The change has been evaluated to ensure that the deleted Surveillance Requirements are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Therefore, appropriate equipment continues to be tested in a manner and at a frequency necessary to give confidence that the equipment can perform its assumed safety function. Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 6

***RELAXATION OF SURVEILLANCE REQUIREMENT ACCEPTANCE CRITERIA***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve the relaxation of Surveillance Requirements acceptance criteria in the current Technical Specifications (CTS).

The CTS require safety systems to be tested and verified Operable prior to entering applicable operating conditions. The ISTS eliminates or relaxes the Surveillance Requirement acceptance criteria that do not contribute to verification that the equipment used to meet the Limiting Condition for Operation (LCO) can perform its required functions. For example, the ISTS allows some Surveillance Requirements to verify Operability under actual or test conditions. Adopting the ISTS allowance for "actual" conditions is acceptable because required features cannot distinguish between an "actual" signal and a "test" signal. Also included are changes to CTS requirements that are replaced in the ITS with separate and distinct testing requirements which, when combined, include Operability verification of all Technical Specification required components for the features specified in the CTS. Adopting this format preference in the ISTS is acceptable because Surveillance Requirements that remain include testing of all previous features required to be verified OPERABLE. Changes that provide exceptions to Surveillance Requirements to provide for variations that do not affect the results of the test are also included in this category. These changes are generally made to conform to NUREG-1431 and have been evaluated to not be detrimental to plant safety.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change relaxes the acceptance criteria of Surveillance Requirements. Surveillances are not initiators to any accident previously evaluated. Consequently, the probability of an accident previously evaluated is not significantly increased. The equipment being tested is still required to be OPERABLE and capable of performing the accident mitigation functions assumed in the accident analysis. As a result, the consequences of any accident previously evaluated are not significantly affected. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 6
**RELAXATION OF SURVEILLANCE REQUIREMENT ACCEPTANCE CRITERIA**
(continued)

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **Does this change involve a significant reduction in a margin of safety?**

   The relaxed acceptance criteria for Surveillance Requirements do not result in a significant reduction in the margin of safety. The relaxed Surveillance Requirement acceptance criteria have been evaluated to ensure that they are sufficient to verify that the equipment used to meet the LCO can perform its required functions. Therefore, appropriate equipment continues to be tested in a manner that gives confidence that the equipment can perform its assumed safety function. Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 7

***RELAXATION OF SURVEILLANCE FREQUENCY***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve the relaxation of Surveillance Frequencies in the current Technical Specifications (CTS).

CTS and ISTS Surveillance Frequencies specify time interval requirements for performing surveillance testing. Increasing the time interval between Surveillance tests in the ISTS results in decreased equipment unavailability due to testing which also increases equipment availability. In general, the ISTS contain test frequencies that are consistent with industry practice or industry standards for achieving acceptable levels of equipment reliability. Adopting testing practices specified in the ISTS is acceptable based on similar design, like-component testing for the system application and the availability of other Technical Specification requirements which provide regular checks to ensure limits are met. Relaxation of Surveillance Frequency may also include changes such as the addition of Surveillance Notes which allow testing to be delayed until appropriate unit conditions for the test are established, or exempt testing in certain MODES or specified conditions in which the testing can not be performed.

Reduced testing can result in a safety enhancement because the unavailability due to testing is reduced and; in turn, reliability of the affected structure, system or component should remain constant or increase. Reduced testing is acceptable where operating experience, industry practice or the industry standards such as manufacturers' recommendations have shown that these components usually pass the Surveillance when performed at the specified interval, therefore the frequency is acceptable from a reliability standpoint. Surveillance Frequency changes to incorporate alternate train testing have been shown to be acceptable where other qualitative or quantitative test requirements are required which are established predictors of system performance. Surveillance Frequency extensions can be based on NRC-approved topical reports. The NRC staff has accepted topical report analyses that bound the plant-specific design and component reliability assumptions. These changes are generally made to conform to NUREG-1431 and have been evaluated to not be detrimental to plant safety.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change relaxes Surveillance Frequencies. The relaxed Surveillance Frequencies have been established based on achieving acceptable levels of equipment reliability.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 7
**RELAXATION OF SURVEILLANCE FREQUENCY**
(continued)

Consequently, equipment which could initiate an accident previously evaluated will continue to operate as expected and the probability of the initiation of any accident previously evaluated will not be significantly increased. The equipment being tested is still required to be OPERABLE and capable of performing any accident mitigation functions assumed in the accident analysis. As a result, the consequences of any accident previously evaluated are not significantly affected. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **Does this change involve a significant reduction in a margin of safety?**

   The relaxed Surveillance Frequencies do not result in a significant reduction in the margin of safety. The relaxation in the Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. Thus, appropriate equipment continues to be tested at a Frequency that gives confidence that the equipment can perform its assumed safety function when required. Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR

***SPECIFIC LESS RESTRICTIVE CHANGES***

None

BVPS CONVERSION TO IMPROVED STANDARD
TECHNICAL SPECIFICATIONS (ISTS)

***SECTION 3.3 B Instrumentation***

ENCLOSURES

1. MARKUP OF THE ISTS TO SHOW THE BVPS DIFFERENCE AND JUSTIFICATION FOR THE DEVIATION (JFD) FROM THE STANDARD
2. MARKUP OF THE ISTS BASES TO SHOW THE BVPS DIFFERENCE AND JFD FROM THE STANDARD
3. MARKUP OF THE CURRENT BVPS TECHNICAL SPECIFICATIONS (CTS) TO SHOW CHANGES AND DISCUSSION OF CHANGES (DOCs)
4. NO SIGNIFICANT HAZARDS CONSIDERATION (NSHC) FOR CHANGES MADE TO THE CTS

ENCLOSURE 1

***CHANGES TO THE ISTS***

MARKUPS TO SHOW BVPS PLANT SPECIFIC DIFFERENCES
&
JUSTIFICATION FOR DEVIATION (JFD)
FROM THE STANDARD TS

Introduction

This enclosure contains the markup of the Improved Standard Technical Specifications (ISTS) to show the changes necessary to make the ISTS document specific to BVPS Units 1 and 2. Changes to the ISTS are identified with a number. The number is associated with a JFD that describes the reason for the change. The markup of the ISTS is followed by a document containing the numbered JFDs for the changes made to each of the ISTS. Not every change to the ISTS is identified and explained by a JFD. Changes that simply insert current Technical Specification (CTS) information into bracketed (optional) ISTS text are not identified with a separate JFD. Bracketed ISTS text identifies specific text that is to be replaced with the corresponding CTS information. Therefore, such changes to the ISTS are self-explanatory and represent the simple transference of CTS requirements to the ISTS. Other changes to the ISTS (i.e., less obvious changes) are described by a JFD.

As the BVPS Unit 1 & 2 Technical Specifications (TS) are being combined into a single set of TS, one markup of each ISTS is usually provided for both Units 1 and 2. In cases where significant Unit differences make separate Unit 1 and 2 TS desirable to preserve the presentation and clarity of the TS requirements, separate Unit specific TS are included. Unit differences are identified in each ISTS.

In addition, the ISTS in this enclosure are marked (where applicable) to show the changes to the standard text resulting from the Industry/NRC TS Task Force (TSTF) process. The TSTF revisions to the standard are marked-up and identified with the applicable TSTF number (i.e., TSTF-03, TSTF-19, etc.). Each TSTF change has its own justification associated with it as part of the Industry/NRC process. The TSTF justifications are not repeated in the BVPS ISTS conversion documentation.

The following Table contains the list of the ISTS and the corresponding BVPS CTS for this section along with the resulting BVPS specific ITS for the section. The Table provides a summary disposition of the ISTS and the CTS for this Section.

SECTION 3.3 B Instrumentation

| ISTS | BVPS ITS | CTS |
|---|---|---|
| 3.3.3 Post Accident Monitoring (PAM) Instrumentation | 3.3.3 PAM Instrumentation | 3.3.3.8 Post Accident Monitoring (PAM) Instrumentation |
| 3.3.4 Remote Shutdown Instrumentation | 3.3.4 Remote Shutdown Instrumentation | 3.3.3.5 Remote Shutdown Instrumentation |
| 3.3.5 Loss of Power (LOP) *Diesel Generator (DG)* Start Instrumentation | 3.3.5 Loss of Power LOP DG *Start and Bus Separation* Instrumentation | 3.3.2.1 Engineered Safety Feature System Instrumentation Function 6 Loss of Power |
| 3.3.6 Containment Purge and Exhaust Isolation Instrumentation | 3.3.6 **Unit 2** Containment Purge and Exhaust Isolation Instrumentation | 3.9.9 Containment Purge and Exhaust Isolation<br>3.3.3.1 Radiation Monitoring Instrumentation Process Monitor 2.c.ii |
| 3.3.7 Control Room Emergency Filtration System (CREFS) Instrumentation | 3.3.7 Control Room Emergency Ventilation System (CREVS) Instrumentation | 3.3.3.1 Radiation Monitoring Instrumentation Area Monitor 1.c |
| 3.3.8 Fuel Building Air Cleanup System (FBACS) Actuation Instrumentation | Not used. (1) | N/A |
| 3.3.9 Boron Dilution Protection System (BDPS) Instrumentation | 3.3.8 Boron Dilution Detection Instrumentation (2) | 3.3.1.1 Reactor Trip System Instrumentation Function 6.b (Source Range Instrumentation Indication Requirements) |

<u>NOTES:</u>

1. ISTS 3.3.8, FBACS, is not used in the BVPS specific implementation of the ISTS. BVPS does not have CTS requirements, or a system design that corresponds to FBACS, or safety analyses assumptions that would require this type of instrumentation to be operable.
2. ISTS 3.3.9 (ITS 3.3.8) is revised to conform to the BVPS design. The generic ISTS 3.3.9 applies to a plant design that has an active system using source range instrument channels to initiate automatic action that re-positions valves in order to mitigate a boron dilution event. The BVPS design does not include this type of automatic mitigation system. The proposed BVPS version of this ISTS contains the source range indication

requirements moved from the Reactor Trip System Instrumentation TS. The affected BVPS source range indication requirements provide monitoring capability only. Therefore, consistent with the ISTS the source range indication only requirements were removed from the Reactor Trip System Technical Specification. The proposed ITS 3.3.8 was developed for the BVPS specific source range indication requirements.

## 3.3 INSTRUMENTATION

### 3.3.3 Post Accident Monitoring (PAM) Instrumentation

5

LCO 3.3.3 The PAM instrumentation for each Function in Table 3.3.3-1 shall be OPERABLE.

NOTE
The Power Range Neutron Flux PAM Function is not required in MODE 3.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

- NOTES -

1. ~~LCO 3.0.4 is not applicable.~~

~~2.~~ Separate Condition entry is allowed for each Function.

TSTF-359

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more Functions with one required channel inoperable. | A.1 Restore required channel to OPERABLE status. | 30 days |
| B. Required Action and associated Completion Time of Condition A not met. | B.1 Initiate action in accordance with Specification 5.6.~~7~~. | Immediately |
| C. ~~- NOTE - Not applicable to hydrogen monitor channels.~~ One or more Functions with two required channels inoperable. | C.1 Restore ~~one~~ channel to OPERABLE status. | 7 days |
| D. ~~Two hydrogen monitor channels inoperable.~~ | D.1 ~~Restore one hydrogen monitor channel to OPERABLE status.~~ | ~~72 hours~~ |

TSTF-369

5

required

(s)

4

4

or more

1

Initiate action in accordance with Specification 5.6.5, except that the report required by Specification 5.6.5 must be submitted to the NRC within 7 days instead of 14 days.

Immediately

2

Required Action and associated Completion Time of Condition C not met.



5

2

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| ~~E. Required Action and associated Completion Time of Condition C or D not met.~~ | ~~E.1 Enter the Condition referenced in Table 3.3.3-1 for the channel.~~ | ~~Immediately~~ |
| ~~F.~~ E ~~As required by Required Action E.1 and referenced in Table 3.3.3-1.~~ Required Action and associated Completion Time of Condition B or D not met or requirements of Specification 5.6.5 not met. | ~~F~~E.1 Be in MODE 3.<br>AND<br>~~F~~E.2 Be in MODE 4. | 6 hours<br><br>12 hours |
| ~~G. As required by Required Action E.1 and referenced in Table 3.3.3-1.~~ | ~~G.1 Initiate action in accordance with Specification 5.6.~~~~7~~5. | ~~Immediately~~ |

5 TSTF-369

SURVEILLANCE REQUIREMENTS

- NOTE -
SR 3.3.3.1 and SR 3.3.3.2 apply to each PAM instrumentation Function in Table 3.3.3-1~~.~~, except as noted in SR 3.3.3.2.

6

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.3.1 | Perform CHANNEL CHECK for each required instrumentation channel that is normally energized. | 31 days |
| SR 3.3.3.2 | - NOTE -<br>1. Neutron detectors are excluded from CHANNEL CALIBRATION.<br>2. Not applicable to the Penetration Flow Path Containment Isolation Valve Position Function.<br><br>Perform CHANNEL CALIBRATION. | [18] months |
| SR 3.3.3.3 | -NOTE-<br>Only applicable to the Penetration Flow Path Containment Isolation Valve Position Function.<br><br>Perform TADOT. | 18 months |

6



6

INSERT CTS PAM TABLE

Table 3.3.3-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

| FUNCTION | REQUIRED CHANNELS | CONDITION REFERENCED FROM REQUIRED ACTION E.1 |
|---|---|---|
| 1. Power Range Neutron Flux | 2 | F |
| 2. Source Range Neutron Flux | 2 | F |
| 3. Reactor Coolant System (RCS) Hot Leg Temperature | 2 per loop | F |
| 4. RCS Cold Leg Temperature | 2 per loop | F |
| 5. RCS Pressure (Wide Range) | 2 | F |
| 6. Reactor Vessel Water Level | 2 | G |
| 7. Containment Sump Water Level (Wide Range) | 2 | F |
| 8. Containment Pressure (Wide Range) | 2 | F |
| 9. Penetration Flow Path Containment Isolation Valve Position | 2 per penetration flow path[(a)(b)] | F |
| 10. Containment Area Radiation (High Range) | 2 | G |
| 11. Hydrogen Monitors | 2 | F |
| 12. Pressurizer Level | 2 | F |
| 13. Steam Generator Water Level (Wide Range) | 2 per steam generator | F |
| 14. Condensate Storage Tank Level | 2 | F |
| 15. Core Exit Temperature - Quadrant [1] | 2[(c)] | F |
| 16. Core Exit Temperature - Quadrant [2] | 2[(c)] | F |
| 17. Core Exit Temperature - Quadrant [3] | 2[(c)] | F |
| 18. Core Exit Temperature - Quadrant [4] | 2[(c)] | F |
| 19. Auxiliary Feedwater Flow | 2 | F |

(a) Not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

(c) A channel consists of two core exit thermocouples (CETs).

3

- REVIEWER'S NOTE -

Table 3.3.3-1 shall be amended for each unit as necessary to list:

1. All Regulatory Guide 1.97, Type A instruments and
2. All Regulatory Guide 1.97, Category I, non-Type A instruments in accordance with the unit's Regulatory Guide 1.97, Safety Evaluation Report.

## CTS PAM TABLE (combined Unit 1 and 2)

| FUNCTION | REQUIRED CHANNELS |
|---|---|
| 1. Pressurizer Water Level | 2 |
| 2. Auxiliary Feedwater Flow Rate to Steam Generator (SG) | |
| a) Unit 1 | 3 (1 per SG) |
| b) Unit 2 | |
| 1. SG "A" | 2 |
| 2. SG "B" | 2 |
| 3. SG "C" | 2 |
| 3. Power Range Neutron Flux | 2 |
| 4. High Head Safety Injection Flow | 1 |
| 5. SG Pressure | |
| a) SG "A" | 2 |
| b) SG "B" | 2 |
| c) SG "C" | 2 |
| 6. Refueling Water Storage Tank Level (Wide Range) | 2 |
| 7. Reactor Coolant System Pressure (Wide Range) | 2 |
| 8. SG Water Level (Wide Range) | 3 (1 per SG) |
| 9. Containment Area Radiation (High Range) | 2 |
| 10. Containment Pressure (Wide Range) | 2 |
| 11. Core Exit Temperature | 2[c] |
| 12. Penetration Flow Path Containment Isolation Valve Position | 2 per penetration flow path [a][b] |

TSTF-359

3.3 INSTRUMENTATION

3.3.4 Remote Shutdown System

LCO 3.3.4 The Remote Shutdown System Functions shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

- NOTES -

1. ~~LCO 3.0.4 is not applicable.~~

~~2.~~ Separate Condition entry is allowed for each Function.

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more required Functions inoperable. | A.1 Restore required Function to OPERABLE status. | 30 days |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.<br>AND<br>B.2 Be in MODE 4. | 6 hours<br><br>12 hours |

SURVEILLANCE REQUIREMENTS

3

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.4.1 | ~~[~~Perform CHANNEL CHECK for each required indication instrumentation channel that is normally energized. | 31 days~~]~~ |
| SR 3.3.4.2 | Verify each required control circuit and transfer switch is capable of performing the intended function. | ~~[18]~~ 36 months |

3

1



9

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.4.3<br>1 2<br>3 indication | - NOTE -<br>Neutron detectors are excluded from CHANNEL CALIBRATION.<br><br>Perform CHANNEL CALIBRATION for each required instrumentation channel. | [18] months |
| SR 3.3.4.4<br>2 | ~~[ Perform TADOT of the reactor trip breaker open/closed indication.~~ | ~~18 months ]~~ |

and Bus Separation

3.3 INSTRUMENTATION

3.3.5 Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation

LCO 3.3.5 ~~[Three] channels per bus of the loss of voltage Function and [three] channels per bus of the degraded voltage Function~~ shall be OPERABLE.

1

The DG Start and Bus Separation instrumentation specified in Table 3.3.5-1

APPLICABILITY: MODES 1, 2, 3, and 4,
When associated DG is required to be OPERABLE by LCO 3.8.2, "AC Sources - Shutdown."

INSERT NEW CONDITION A

3

ACTIONS

- NOTE -
Separate Condition entry is allowed for each Function.

5

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B<br>A. One or more Functions with one channel per bus inoperable. | B<br>A.1 - NOTE -<br>The inoperable channel may be bypassed for up to [4] hours for surveillance testing of other channels.<br>Place channel in trip. | provided the corresponding instrument channels, electrical bus, and DG in the other train are OPERABLE.<br>[6] hours |
| C<br>B. One or more Functions with two ~~or more~~ channels per bus inoperable. | C<br>B.1 Restore ~~all but~~ one channel per bus to OPERABLE status. | 1 hour |
| 6<br>C. Required Action and associated Completion Time not met.<br>E | C.1 Enter applicable Condition(s) and Required Action(s) for the associated DG made inoperable by LOP DG start instrumentation. | Immediately<br>1<br>or Bus Separation |

4

INSERT NEW CONDITION D

CTS Value

7

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| ~~SR 3.3.5.1~~ | ~~[ Perform CHANNEL CHECK.~~ | ~~12 hours ]~~ 92 |
| SR 3.3.5.~~2~~ 1 | Perform TADOT. Insert SR Note | ~~[31]~~ days |
| SR 3.3.5.~~3~~ 2 | Perform CHANNEL CALIBRATION ~~with [Nominal Trip Setpoint and Allowable Value] as follows:~~<br>~~a. [ Loss of voltage Allowable Value ≥ [2912] V and ≤ [ ] V with a time delay of [0.8] ± [ ] second.~~<br>~~Loss of voltage Nominal Trip Setpoint [2975] V with a time delay of [0.8] ± [ ] second. ]~~<br>~~b. [ Degraded voltage Allowable Value ≥ [3683] V and ≤ [ ] V with a time delay of [20] ± [ ] seconds.~~<br>~~Degraded voltage Nominal Trip Setpoint [3746] V with a time delay of [20] ± [ ] seconds. ]~~ | [18] months |

1 2 8 9

| | | |
|---|---|---|
| SR 3.3.5.3 | Verify ESF RESPONSE TIMES are within limit. | 18 months on a STAGGERED TEST BASIS |

10

1

INSERT TABLE 3.3.5-1

## INSERTS FOR ITS 3.3.5

New Condition A

| | | | |
|---|---|---|---|
| A. One or more Functions with one or more required channels inoperable. | A.1 | Enter the applicable Condition(s) referenced in Table 3.3.5-1 for the affected channel(s). | Immediately |

New Condition D

| | | | |
|---|---|---|---|
| D. One or more Functions with one channel per bus inoperable. | D.1 | Restore inoperable channel to OPERABLE status. | 1 hour |

Table 3.3.5-1 (page 1 of 1)
Loss of Power Diesel Generator Start and Bus Separation Instrumentation

| FUNCTION | REQUIRED CHANNELS PER BUS | CONDITIONS | UNIT 1 ALLOWABLE VALUE | UNIT 2 ALLOWABLE VALUE |
|---|---|---|---|---|
| Loss of Voltage | | | | |
| 1. 4160V Emergency Bus DG start | 1 | D, E | ≥ 2962 V with a time delay of < 0.9 seconds | ≥ 2962 V with a time delay of 0.33 ± 0.03 seconds |
| 2. 4160V Emergency Bus Bus Separation | 1 (Unit 1)<br>2 (Unit 2) | D, E (Unit 1)<br>B,C,E (Unit 2) | ≥ 2962 V with a time delay of 1.0 ± 0.1 seconds | ≥ 2962 V with a time delay of 1.0 ± 0.1 seconds |
| Degraded Voltage | | | | |
| 3. 4160V Emergency Bus Bus Separation | 2 | B,C,E | ≥ 3886 V with a time delay of 90 ± 5.0 seconds | ≥ 3873 V with a time delay of 90 ± 5.0 seconds |
| 4. 480V Emergency Bus Bus Separation | 2 | B,C,E | ≥ 449 V with a time delay of 90 ± 5.0 seconds | ≥ 447 V with a time delay of 90 ± 5.0 seconds |

SR 3.3.5.1 Note Insert

---

**- NOTE -**
Verification of setpoint is not required.

---

Unit 2

NOTE
This Specification is only applicable to Unit 2.

## 3.3 INSTRUMENTATION

### 3.3.6 Containment Purge and Exhaust Isolation Instrumentation

Unit 2

1

2

LCO 3.3.6 The Containment Purge and Exhaust Isolation instrumentation for each Function in Table 3.3.6-1 shall be OPERABLE.

During movement of recently irradiated fuel assemblies within the containment, and
During movement of fuel assemblies over recently irradiated fuel assemblies within the containment.

APPLICABILITY: ~~According to Table 3.3.6-1~~.

ACTIONS

- NOTE -
Separate Condition entry is allowed for each Function.

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One radiation monitoring channel inoperable. | A.1 Restore the affected channel to OPERABLE status. | 4 hours |
| ~~B. - NOTE - Only applicable in MODE 1, 2, 3, or 4.<br>One or more Functions with one or more manual or automatic actuation trains inoperable.<br>OR<br>Two or more radiation monitoring channels inoperable.<br>OR<br>Required Action and associated Completion Time of Condition A not met.~~ | ~~B.1 Enter applicable Conditions and Required Actions of LCO 3.6.3, "Containment Isolation Valves," for containment purge and exhaust isolation valves made inoperable by isolation instrumentation.~~ | ~~Immediately~~ |

3



14

Unit 2

3

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B ~~C.~~ ~~- NOTE - Only applicable during movement of [recently] irradiated fuel assemblies within containment.~~<br>4<br>5 One or more ~~Functions with one or more~~ manual ~~or automatic actuation trains~~ initiation channels inoperable.<br>OR<br>Two ~~or more~~ radiation monitoring channels inoperable.<br>7<br>OR<br>Required Action and associated Completion Time for Condition A not met. | ~~C.1~~ Place and maintain containment purge and exhaust valves in closed position.<br>OR B 3 3.9.3 6<br>~~C.2~~ Enter applicable Conditions and Required Actions of LCO ~~3.9.4~~, "Containment Penetrations," for containment purge and exhaust isolation valves made inoperable by isolation instrumentation. | Immediately<br><br><br><br>Immediately |

SURVEILLANCE REQUIREMENTS

- NOTE -
Refer to Table 3.3.6-1 to determine which SRs apply for each Containment Purge and Exhaust Isolation Function.

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.6.1 | Perform CHANNEL CHECK. | 12 hours |
| 8 ~~SR 3.3.6.2~~ | ~~Perform ACTUATION LOGIC TEST.~~ | ~~31 days on a STAGGERED TEST BASIS~~ |

Unit 2

SURVEILLANCE REQUIREMENTS (continued)

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| 8 SR 3.3.6.3 SR 3.3.6.2 | ~~Perform MASTER RELAY TEST.~~ | ~~31 days on a STAGGERED TEST BASIS~~ |
| ~~SR 3.3.6.4~~ | Perform COT. | 92 days |
| 8 ~~SR 3.3.6.5~~ | ~~Perform SLAVE RELAY TEST.~~ | ~~[92] days~~ |
| ~~SR 3.3.6.6~~ SR 3.3.6.3 SR 3.3.6.4 | - NOTE - Verification of setpoint is not required.<br><br>Perform TADOT. | [18] months |
| 8 ~~SR 3.3.6.7~~ | Perform CHANNEL CALIBRATION. | [18] months |

Unit 2

Table 3.3.6-1 (page 1 of 1)
Containment Purge and Exhaust Isolation Instrumentation

2 10 8

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | SURVEILLANCE REQUIREMENTS | TRIP SETPOINT |
|---|---|---|---|---|
| | | 1 per valve | | 3.3.6.3 |
| 1. Manual Initiation | 1,2,3,4, (a) | ~~2~~ | SR ~~3.3.6.6~~ | NA |
| 2. Automatic Actuation Logic and Actuation Relays | 1,2,3,4, (a) | 2 trains | ~~SR 3.3.6.2~~ SR 3.3.6.3 SR 3.3.6.5 | NA |
| 3. ~~[~~ Containment Radiation | | CTS Value | 8 3.3.6.2 | |
| ~~a.~~ Gaseous | 1,2,3,4, (a) | ~~[1]~~ 2 | SR 3.3.6.1 SR ~~3.3.6.4~~ SR ~~3.3.6.7~~ 3.3.6.4 | ≤ ~~[2 x background]~~ 1.01 x $10^{-3}$ μ Ci / cc above background |
| b. Particulate | 1,2,3,4, (a) | [1] | SR 3.3.6.1 SR 3.3.6.4 SR 3.3.6.7 | ≤ [2 x background] |
| c. Iodine | 1,2,3,4, (a) | [1] | SR 3.3.6.1 SR 3.3.6.4 SR 3.3.6.7 | ≤ [2 x background] |
| d. Area Radiation | 1,2,3,4, (a) | [1] | SR 3.3.6.1 SR 3.3.6.4 SR 3.3.6.7 | ≤ [2 x background] ] |
| 4. Containment Isolation - Phase A | Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 3.a., for all initiation functions and requirements. | | | |

8 2 9 CTS Value

(a) During ~~movement of [recently]~~ irradiated fuel ~~assemblies within~~ containment.

2



17

## 3.3 INSTRUMENTATION

Ventilation

### 3.3.7 Control Room Emergency ~~Filtration~~ System (CR~~F~~S) Actuation Instrumentation

V

LCO 3.3.7 The CRE~~F~~S actuation instrumentation for each Function in Table 3.3.7-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.7-1.

ACTIONS

**- NOTE -**
Separate Condition entry is allowed for each Function.

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more Functions with one channel or train inoperable. | A.1 ~~- NOTE - [ Place in toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable. ]~~<br>Place one CRE~~F~~S train in emergency ~~[radiation protection]~~ mode. pressurization V of operation. | 7 days 1 |
| B. One or more Functions with two channels or two trains inoperable. | ~~- NOTE - [ Place in the toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable. ]~~<br>B.1~~.1~~ Place one CRE~~F~~S train in emergency ~~[radiation protection]~~ mode. pressurization V of operation.<br>AND | Immediately |

V

10 of LCO 3.7.10, "CREVS,"

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| | B.~~1.~~2 | Enter applicable Conditions and Required Actions for ~~one CREFS train made inoperable by inoperable~~ CREFS actuation instrumentation. | Immediately |
| | ~~OR~~ | | |
| | ~~B.2~~ | ~~Place both trains in emergency [radiation protection] mode.~~ | ~~Immediately~~ |
| C. Required Action and associated Completion Time for Condition A or B not met in MODE 1, 2, 3, or 4. | C.1 | Be in MODE 3. | 6 hours |
| | AND | | |
| | C.2 | Be in MODE 5. | 36 hours |
| D. Required Action and associated Completion Time for Condition A or B not met during movement of [recently] irradiated fuel assemblies. | D.1 | Suspend movement of [recently] irradiated fuel assemblies. | Immediately |
| ~~E. [ Required Action and associated Completion Time for Condition A or B not met in MODE 5 or 6.~~ | ~~E.1~~ | ~~Initiate action to restore one CREFS train to OPERABLE status.~~ | ~~Immediately ]~~ |

V

2

, or during movement of fuel assemblies over recently irradiated fuel assemblies.

CTS Applicability

3

| | | |
|---|---|---|
| AND | | |
| D.2 | Suspend movement of fuel assemblies over recently irradiated fuel assemblies. | Immediately |

V

SURVEILLANCE REQUIREMENTS

V

- NOTE -
Refer to Table 3.3.7-1 to determine which SRs apply for each CREFS Actuation Function.

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.3.7.1 | Perform CHANNEL CHECK. | 12 hours |
| 4 SR 3.3.7.2 | Perform COT. | 92 days |
| ~~SR 3.3.7.3~~ | ~~Perform ACTUATION LOGIC TEST.~~ | ~~31 days on a STAGGERED TEST BASIS~~ |
| ~~SR 3.3.7.4~~ | ~~Perform MASTER RELAY TEST.~~ | ~~31 days on a STAGGERED TEST BASIS~~ |
| ~~SR 3.3.7.5~~ | ~~Perform SLAVE RELAY TEST.~~ | ~~[92] days~~ |
| SR 3.3.7.6 <br> 4 3 <br> 4 | - NOTE - <br> Verification of setpoint is not required. <br> Perform TADOT. | <br> <br> [18] months |
| SR 3.3.7.7 | Perform CHANNEL CALIBRATION. | [18] months |

Table 3.3.7-1 (page 1 of 1)
CREFS Actuation Instrumentation
V

| | FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | SURVEILLANCE REQUIREMENTS | TRIP SETPOINT | |
|---|---|---|---|---|---|---|
| | 1. Manual Initiation | 1, 2, 3, 4, ~~[5, 6]~~ (a) 5 | 2 trains | SR ~~3.3.7.6~~ 3.3.7.3 | NA | 4 |
| 4 | ~~2. Automatic Actuation Logic and Actuation Relays~~ | ~~1, 2, 3, 4, [5, 6], (a)~~ | ~~2 trains~~ | ~~SR 3.3.7.3~~ ~~SR 3.3.7.4~~ ~~SR 3.3.7.5~~ | ~~NA~~ | |
| 4 | ~~3.~~ 2 Control Room Radiation | | | | | |
| | ~~a.~~ Control Room ~~Atmosphere~~ Area Monitors 7 | 6 ~~1, 2, 3, 4, [5,6]~~ (a) 5 | [2] | SR 3.3.7.1 SR 3.3.7.2 SR ~~3.3.7.7~~ 3.3.7.4 4 | ~~≤ [2] mR/hr~~ Unit 1 ≤ 0.47 mR/hr above background; Unit 2 ≤ 0.476 mR/hr above background | CTS Values |
| 8 | ~~b. Control Room Air Intakes~~ 7 | ~~1, 2, 3, 4, [5, 6], (a)~~ | ~~[2]~~ | ~~SR 3.3.7.1 SR 3.3.7.2 SR 3.3.7.7~~ | ~~≤ [2] mR/hr~~ | |
| 4 | ~~4.~~ 3 ~~Safety Injection~~ Containment Isolation - Phase B | Refer to LCO 3.3.2, "ESFAS Instrumentation," Function ~~1~~ 3.b for all initiation functions and requirements. | | | | 8 |

(a) During movement of [recently] irradiated fuel assemblies~~.~~, and during movement of fuel assemblies over recently irradiated fuel assemblies. 9

## 3.3 INSTRUMENTATION

### 3.3.8 Fuel Building Air Cleanup System (FBACS) Actuation Instrumentation

LCO 3.3.8 The FBACS actuation instrumentation for each Function in Table 3.3.8-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.8-1.

ACTIONS

- NOTES -

1. LCO 3.0.3 is not applicable.

2. Separate Condition entry is allowed for each Function.

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One or more Functions with one channel or train inoperable. | A.1 | Place one FBACS train in operation. | 7 days |
| B. One or more Functions with two channels or two trains inoperable. | B.1.1 | Place one FBACS train in operation. | Immediately |
| | | AND | |
| | B.1.2 | Enter applicable Conditions and Required Actions of LCO 3.7.13, "Fuel Building Air Cleanup System (FBACS)," for one train made inoperable by inoperable actuation instrumentation. | Immediately |
| | OR | | |
| | B.2 | Place both trains in emergency [radiation protection] mode. | Immediately |

1

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| C. Required Action and associated Completion Time for Condition A or B not met during movement of [recently] irradiated fuel assemblies in the fuel building. | C.1 | Suspend movement of [recently] irradiated fuel assemblies in the fuel building. | Immediately |
| D. [ Required Action and associated Completion Time for Condition A or B not met in MODE 1, 2, 3, or 4. | D.1<br>AND | Be in MODE 3. | 6 hours |
| | D.2 | Be in MODE 5. | 36 hours ] |

SURVEILLANCE REQUIREMENTS

- NOTE -
Refer to Table 3.3.8-1 to determine which SRs apply for each FBACS Actuation Function

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.8.1 | Perform CHANNEL CHECK. | 12 hours |
| SR 3.3.8.2 | Perform COT. | 92 days |
| SR 3.3.8.3 | [Perform ACTUATION LOGIC TEST. | 31 days on a STAGGERED TEST BASIS ] |
| SR 3.3.8.4 | - NOTE -<br>Verification of setpoint is not required.<br><br>Perform TADOT. | [18] months |

1

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.8.5 | Perform CHANNEL CALIBRATION. | [18] months |

1

Table 3.3.8-1 (page 1 of 1)
FBACS Actuation Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | SURVEILLANCE REQUIREMENTS | TRIP SETPOINT |
|---|---|---|---|---|
| 1. Manual Initiation | [1,2,3,4], (a) | 2 | SR 3.3.8.4 | NA |
| 2. [ Automatic Actuation Logic and Actuation Relays | 1,2,3,4, (a) | 2 trains | SR 3.3.8.3 | NA ] |
| 3. Fuel Building Radiation | | | | |
| a. Gaseous | [1,2,3,4], (a) | [2] | SR 3.3.8.1<br>SR 3.3.8.2<br>SR 3.3.8.5 | ≤ [2] mR/hr |
| b. Particulate | [1,2,3,4], (a) | [2] | SR 3.3.8.1<br>SR 3.3.8.2<br>SR 3.3.8.5 | ≤ [2] mR/hr |

(a) During movement of [recently] irradiated fuel assemblies in the fuel building.

Boron Dilution Detection Instrumentation 3.3.8

~~BDPS 3.3.9~~

1

3.3.8 Boron Dilution Detection Instrumentation

3.3 INSTRUMENTATION

~~3.3.9 Boron Dilution Protection System (BDPS)~~

2

3.3.8

LCO ~~3.3.9~~ ~~Two trains of the BDPS~~ shall be OPERABLE.

One Source Range channel

APPLICABILITY: MODES ~~[2,]~~ 3, 4, and 5~~.~~

with all rods fully inserted and without rod withdrawal capability

4

~~-NOTE -~~
~~The boron dilution flux doubling signal may be blocked in MODES 2 and 3 during reactor startup.~~

Required channel

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. ~~One train~~ inoperable. | ~~A.1 Restore train to OPERABLE status.~~ | ~~72 hours~~ |
| ~~B. Two trains inoperable.~~<br>~~OR~~<br>~~Required Action and associated Completion Time of Condition A not met.~~ | - NOTE -<br>Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM.<br><br>B.1 Suspend operations involving positive reactivity additions. | <br><br><br><br>Immediately |
| | AND | |
| | B.2.1 Restore ~~one train~~ to OPERABLE status. | 1 hour |
| | OR | |

4

A

inoperable channel

4



8

26

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| 4 A | B.2.2.1 Close unborated water source isolation valves.<br><br>AND<br><br>B.2.2.2 Perform SR 3.1.1.1. | 1 hour<br><br><br><br>1 hour<br><br>AND<br><br>Once per 12 hours thereafter |

SURVEILLANCE REQUIREMENTS

2 3.3.8

3 3.3.8.2

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR ~~3.3.9~~.1 | Perform CHANNEL CHECK. | 12 hours |
| ~~SR 3.3.9.2~~ | ~~Perform COT.~~ | ~~[92] days~~ |
| SR ~~3.3.9~~.3 | - NOTE -<br>Neutron detectors are excluded from CHANNEL CALIBRATION.<br><br>Perform CHANNEL CALIBRATION. | [18] months |

# 3.3 B Instrumentation

## JUSTIFICATIONS FOR DEVIATION

## *ITS 3.3.3 Post Accident Monitoring (PAM) Instrumentation*

JUSTIFICATION FOR DEVIATION (JFD)

1. ISTS 3.3.3 is revised to delete reference to the Hydrogen Monitors. The proposed change to the ISTS is consistent with the guidance of TSTF-447, Rev. 1 and the NRC proposed rule change to 10 CFR 50.44 to amend the standards for combustible gas control in light-water-cooled power reactors. These industry efforts result in the removal of Hydrogen system requirements from the TS (per applicable changes to ISTS in TSTF-447). Note some of the changes resulting from TSTF-447 are not fully shown (marked-up) on ISTS 3.3.3 (e.g., the re-lettering of Action Conditions) due to the extensive changes made to this LCO which effectively overwrite the TSTF changes. This was done to limit the potential confusion that could result from multiple markups on markups.
2. ISTS 3.3.3 Actions D, E, F, and G are revised and consolidated consistent with the corresponding CTS Actions as revised by License Amendment Request numbers 314 (Unit 1) and 187 (Unit 2). The BVPS specific implementation of this ISTS does not require the various options provided by the ISTS Actions. Due to the BVPS specific list of PAM instruments, not all the ISTS Actions are applicable or necessary. The ISTS default shutdown requirement (ITS Condition E) is retained and modified as necessary to make it more consistent with the corresponding CTS default shutdown Actions. Therefore, the proposed BVPS Actions consolidate and simplify the Actions consistent with the CTS as revised by License Amendment Request numbers 314 (Unit 1) and 187 (Unit 2).
3. The ISTS 3.3.3 Table 3.3.3-1 listing the required PAM instrumentation is replaced with the corresponding CTS Table as modified by License Amendment Request (LAR) numbers 314 (Unit 1) and 187 (Unit 2). LARs 314/187 implement changes to the BVPS PAM instrumentation consistent with Westinghouse WCAP-15981 Rev. 0, "Post Accident Monitoring Instrumentation Redefinition for Westinghouse NSSS Plants." WCAP-15981 provides a methodology to evaluate PAM instrumentation on a plant specific basis. The application of the WCAP methodology results in a plant specific list of PAM instrumentation based on the instrumentation necessary to mitigate design basis accidents and those instruments determined to be important to safety using a plant specific Probabilistic Risk Assessment. Rather than include all Category 1 and Type A Regulatory Guide 1.97 instrumentation as described in the ISTS Bases, the application of the WCAP methodology results in specifying a subset of the Regulatory Guide 1.97 instrumentation requirements with a better technical basis for each instrument selected.
4. ISTS 3.3.3 Action Condition C is applicable for two inoperable PAM channels and is intended to address the condition where one or more required instrument Functions have no channels remaining operable. The corresponding ITS 3.3.3 Action is revised to address the condition of two or more channels inoperable. The BVPS specific implementation of the PAM TS contains Functions with 3 required channels (SG level wide range for both units and AFW flow rate for Unit 1). The proposed change is consistent with the CTS Actions as modified by License Amendment Request (LAR) numbers 314 (Unit 1) and 187 (Unit 2). LARs 314/187 implement changes to the BVPS

PAM instrumentation consistent with Westinghouse WCAP-15981.

5. ISTS 3.3.3 specifies that all PAM Functions must be operable in Modes 1, 2, and 3. The ISTS requirement is revised consistent with the CTS as modified by License Amendment Request (LAR) numbers 314 (Unit 1) and 187 (Unit 2). LARs 314/187 implement changes to the BVPS PAM instrumentation consistent with Westinghouse WCAP-15981. The BVPS specific requirement for the PAM Power Range Neutron Flux Function (based on WCAP-15981) only includes Modes 1 and 2. The proposed Power Range Neutron Flux PAM Function applicability is based on the reason the monitoring function is included in the PAM specification in the first place (i.e., to confirm an automatic trip from power). In Mode 3, the reactor is shutdown and the necessity to confirm a reactor trip from power no longer exists. In addition, in Mode 3, other Technical Specification requirements govern the operability of the flux monitoring instrumentation (e.g., ITS 3.3.1, RTS). Therefore, an ISTS style Note is added to provide the necessary exception to the LCO requirements for the power range neutron flux PAM indication requirements in Mode 3 consistent with the CTS.

6. The ISTS Surveillance Requirements are revised consistent with the CTS as modified by License Amendment Request (LAR) numbers 314 (Unit 1) and 187 (Unit 2). LARs 314/187 implement changes to the BVPS PAM instrumentation consistent with Westinghouse WCAP-15981. In addition, these LARs added a surveillance requirement that is more specific to the Containment Isolation Valve Position Indication Function. The LARs added a TADOT (Channel Functional Test in the CTS) surveillance applicable only to the containment isolation valve position indication. This new surveillance replaces the Channel Calibration surveillance specified for the containment isolation valve position indication in the ISTS. The addition of this new surveillance is justified in LARs 314/187 and requires several changes to the ISTS surveillance requirements to clarify the application of the new surveillance. These changes are consistent with the CTS as revised by LARs 314/187.

## *ITS 3.3.4 Remote Shutdown Instrumentation*

JUSTIFICATION FOR DEVIATION (JFD)

1. ISTS SR 3.3.4.2 requires the Remote Shutdown System control and transfer switches to be verified operable. The corresponding BVPS CTS requirements for the Remote Shutdown System (CTS 3.3.3.5) do not include any operability or surveillance requirements for control and transfer switches. The CTS requirements only address monitoring instrumentation. In order to conform more closely to the ISTS requirements, BVPS is including requirements for control and transfer switches in proposed ITS 3.3.4. However, the ISTS "bracketed" or optional surveillance Frequency of 18 months is revised to 36 months. This change is made to be more consistent with the current BVPS test frequency for transfer and control switches. Currently BVPS verifies the operability of these switches every 54 months in existing plant procedures outside of the TS. The control and transfer circuits verified by this surveillance are designed to be highly reliable and are not subject to excessive wear from daily use or being in a harsh environment. In addition, the inclusion of this instrumentation in the TS provides additional assurance that adequate post maintenance testing will be performed to ensure operability after modifications or design changes. Thus, although the proposed ITS test frequency is different than the bracketed ISTS Frequency, it is more conservative than the existing BVPS test requirements for this instrumentation and will provide additional assurance the required control and transfer circuits are maintained operable. Because of this change in Frequency the SRs are renumbered to place the longest surveillance frequency last in the list.
2. ISTS SR 3.3.4.4 states "Perform TADOT of the reactor trip breaker open/closed indication." The Frequency for the SR is 18 months. The corresponding CTS 3.3.3.5, "Remote Shutdown Instrumentation", and the proposed BVPS ITS LCO 3.3.4 for Remote Shutdown Instrumentation do not include the requirement for RTB position indication. The BVPS Unit 1 and 2 Emergency Shutdown Panels do not include RTB indication. This change to the ISTS is acceptable because reactor trip breaker indication is not required to ensure the Reactivity Control Function is capable of maintaining the unit in a shutdown condition. Westinghouse plants without remote RTB indication and control assure (via the applicable plant procedures) that RTBs are verified open prior to evacuating the control room. The Emergency Shutdown Panels include sufficient instrumentation and controls to monitor and control core reactivity remotely once the RTBs are open.
3. ITS SR 3.3.4.1 and SR 3.3.4.2 are revised to incorporate a clarification consistent with the method used to distinguish the applicable required channels on Table B 3.3.4-1. There are two types of required channels specified in the Bases Table (i.e., indication and control/transfer). SRs 3.3.4.1 and 3.3.4.2 are applicable to the indication channels. ITS SR 3.3.4.3 is applicable to the control and transfer function channels. By more clearly labeling ITS SR 3.3.4.1 and 3.3.4.2 as required for "indication" channels, the proposed change provides a clarification that helps to avoid the potential for confusing the intended application of these SRs to channels other than indication channels.

## *ITS 3.3.5 Loss of Power (LOP) Diesel Generator (DG) Start and Bus Separation Instrumentation*

JUSTIFICATION FOR DEVIATION (JFD)

1. ISTS LCO 3.3.5 is titled Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation and the LCO requires "[Three] channels per bus of the loss of voltage Function and [three] channels per bus of the degraded voltage Function to be OPERABLE." The ISTS LCO title and requirements are revised to more closely conform to the BVPS undervoltage relay design and CTS licensing basis. The proposed BVPS LCO title includes the bus separation function of the undervoltage relays as well as the DG start function. In addition, the BVPS specific LCO operability requirements refer to the instrumentation specified in Table 3.3.5-1 instead of listing the instrumentation in the LCO like the ISTS.

   In order to better understand the changes made to the ISTS 3.3.5, the BVPS Unit 1 and 2 under voltage and degraded grid voltage protection is described below.

   The Unit 1 loss of voltage protection consists of two relays for each of the 4160 V emergency buses. One relay actuates to open the normal supply breakers for the associated emergency buses (providing the bus separation function). The other loss of voltage relay provides a start signal for the DG associated with the bus. Both loss of voltage relays have the same nominal trip setpoint and Allowable Value (with different time delays).

   The Unit 2 loss of voltage protection consists of three relays for each 4160 V emergency bus. Two relays on each bus actuate to open the normal supply breakers for the associated emergency buses (with a two-out-of-two logic per bus) to provide the bus separation function. The other loss of voltage relay provides a start signal for the associated DG. All three loss of voltage relays have the same nominal trip setpoint and Allowable Value (with different time delays).

   In addition to the loss of voltage protection, degraded voltage protection for both Units is provided by two relays on each 4160 V emergency bus and two relays on each 480 V emergency bus. The two relays on each bus actuate upon a reduced voltage condition that exists for an extended time. The relays actuate (in a two-out-of-two logic per bus) to open the normal supply breakers and separate the affected emergency bus from the degraded voltage supply. The two-out-of-two logic helps prevent a spurious relay actuation from causing bus separation.

   Thus, the BVPS protection design consists of loss of voltage and degraded voltage relays that function to separate the emergency busses from their normal power supply and loss of voltage relays that directly start the associated emergency DG. In addition, each units' design includes an automatic DG start signal that is generated when either series connected normal supply breaker for an emergency bus is opened (i.e., upon bus separation).

   The proposed changes to the ISTS LCO requirements and title are made to incorporate the various BVPS specific undervoltage relay requirements. The change is necessary due to the number and variety of BVPS specific instrument requirements addressed by this LCO. The revised LCO title includes the BVPS bus separation function to more accurately describe the different BVPS loss of voltage and degraded voltage instrument functions consistent with the current licensing basis. In addition, due to the number and variety of BVPS specific relay requirements, a Table is used to present the required instrument channels in a concise and clear format. The proposed Table is similar to the ISTS Reactor Trip and ESFAS Instrumentation Tables used in ISTS 3.3.1 and ISTS 3.3.2. The proposed Table format provides a better presentation of the various instrument operability requirements including the different setpoints and applicable Action Conditions for each BVPS ITS 3.3.5 instrument function. The use of this Table format for presenting the details of the ITS 3.3.5 LCO requirements is consistent with the use of Tables in the ISTS Reactor Trip System (RTS) and ESFAS Instrumentation LCOs. As such the proposed change maintains consistency of format within the Instrumentation section of the ITS.

2. Not used.

3. The ISTS 3.3.5 Actions are revised by the addition of a new Action Condition A. The addition of this new Action Condition results in re-lettering the subsequent ITS Action Conditions. The proposed new Action is necessary due to the addition of Table 3.3.5-1 (described in JFD 1 above) which lists the applicable Action Conditions for each instrument function. The proposed Action Condition A is similar to the corresponding Condition A in the ISTS RTS and ESFAS Actions which are also used to refer the user to the Table associated with each LCO. The proposed Action Condition A directs the user to Table 3.3.5-1 for the specific Action requirements applicable to each instrument function. Due to the variety of BVPS instrumentation and Action Conditions, the Table format is used to present this information more clearly. Proposed Table 3.3.5-1 lists the applicable Action Conditions for each of the BVPS ITS 3.3.5 instrument functions. The use of the new Action Condition A to refer to Table 3.3.5-1 is consistent with the ISTS RTS and ESFAS Action Conditions and associated Tables. As such, the proposed change maintains consistency of format and presentation within the Instrumentation section of the ITS.

4. ISTS 3.3.5 Action Condition B states "one or more Functions with two or more channels per bus inoperable and requires all but one channel to be restored to operable status. ISTS Action Condition B is revised (as ITS Action Condition C) to delete the phrase "or more" from the Condition statement and the phrase "all but" from the restoration requirement. The proposed BVPS Action Condition would apply to only two channels per bus and require one channel to be restored to operable status. The proposed change is acceptable because it makes the ISTS Action conform more closely to the BVPS specific design. The BVPS instrument channels for which this Action is applicable are designed with two channels per bus. Therefore, as the Action is stated in terms of channels per bus, the Condition of "two or more" and the requirement to restore "all but one" are not applicable to the BVPS design and are deleted from the BVPS specific implementation of this TS. The proposed change makes the Actions more clear considering the BVPS design.

5. The Note in ISTS Action Condition A (ITS Action Condition B) states "the inoperable

channel may be bypassed for up to 4 hours for surveillance testing of other channels." The standard ISTS note is revised to incorporate a limitation that the corresponding instrument channels, electrical bus, and DG in the other train must be operable before the allowance of the note may be applied. The proposed change ensures that the other protection train is operable before the provision of the note can be applied. The proposed change to the standard note is necessary due to the BVPS specific design of the instrument channels for which this condition is applicable. The BVPS design of the affected instrumentation consists of two channels per bus and requires that both channels trip to actuate. Therefore, when one channel is bypassed the instrument function is made unavailable. The proposed additional requirement to verify the other train operable before bypassing a channel provides assurance that the safety function remains available. The proposed provision to the ISTS Note is similar to several such notes used in the ISTS RTS and ESFAS Actions that allow one entire actuation logic train of RTS or ESFAS to be bypassed provided the other train is operable. The allowance to bypass one channel and render the instrument function unavailable to perform required testing is acceptable due to the short time allowed by the note (4 hours) and the proposed addition to the note that requires the other train to be operable. As such, the time in which the affected instrumentation is unavailable is sufficiently limited to minimize risk (based on the acceptability of bypassing an entire train of RTS and ESFAS for the same amount of time) and that the capability to perform the required safety function is preserved by requiring the other train to be operable. In addition, the provision of the note allows routine surveillance testing to be performed. Failure to perform the required surveillance testing within the specified frequency could result in failure to meet the LCO. In this case, the Actions for failing to meet the LCO would result in declaring the affected DG inoperable. Considering that the most probable outcome of performing any surveillance is that the affected plant equipment is found to be operable, requiring the affected DG to be declared inoperable for failure to perform the required undervoltage relay surveillance is overly conservative and unnecessary to assure the operability of the affected instrument channel.

6. The ISTS 3.3.5 Actions are revised by the addition of a new Action Condition. The proposed BVPS specific Action Condition D states that with "one or more Functions with one channel per bus inoperable" the inoperable channel must be restored to operable status in 1 hour. The new Action condition is necessary due to the BVPS design which includes electrical busses with only one channel of undervoltage instrumentation. The other ISTS Action conditions address multiple channels per bus. The proposed change provides an Action Condition applicable to a single channel design that provides a Completion Time (1 hour) consistent with the ISTS Action Condition B Completion Time. ISTS Action Condition B addresses two or more inoperable channels per bus (i.e., potentially no operable channels left on the bus) and allows 1-hour to restore all but one channel to operable status. Similar to ISTS Action Condition B, the proposed ITS Action Condition D allows a 1-hour restore time when the single channel per bus is inoperable. The proposed Completion Time for this condition is sufficiently short to minimize risk and provide some time to restore the channel to operable status prior to declaring the associated DG inoperable. In addition, the proposed Action Condition maintains consistency with the ISTS Allowance provided in ISTS Condition B for two or more inoperable channels on a bus.

7. The bracketed (optional) ISTS surveillance requirement (ISTS SR 3.3.5.) for a channel check is deleted consistent with the CTS requirements for this instrumentation. All the subsequent ISTS SRs are renumbered accordingly. The channel check requirement results in verifying the voltage of a bus that is monitored by an undervoltage relay. The verification of bus voltage does not provide a meaningful operability verification of an associated undervoltage relay channel (i.e., the indicated bus voltage does not confirm relay operation or status). In addition, bus voltage indications and alarms are readily available to operators and this additional check does not provide significant additional assurance of bus voltage status. Therefore, the optional ISTS surveillance does not contribute a significant safety benefit. The proposed change to the ISTS maintains the current BVPS licensing basis requirements for this instrumentation.

8. ISTS SR 3.3.5.2 (ITS SR 3.3.5.1) specifies that a TADOT be performed on the undervoltage relay instrumentation. The ISTS SR is revised by the addition of a Note that states: "Verification of setpoint not required." The proposed change is consistent with the SR requirements for undervoltage relays in the ISTS ESFAS specification. As such, the proposed change improves the internal consistency of the ISTS with regard to the TADOT surveillance requirements for undervoltage relay instrumentation. The ISTS TADOT corresponds to the CTS Channel Functional Test surveillance requirement for this instrumentation. As such, it should also be noted that the proposed exception to the verification of setpoints is consistent with the requirements of the CTS CFT definition which does not require setpoint verification.

   The relay instrumentation associated with this Function consists of simple contacts operated by a solid state relay driving auxiliary relays that are not located where they are subject to an adverse environment. The associated instrument signal from the relay is not processed through complicated circuitry consisting of a variety of electronic components subject to age or environmental affects that may contribute to significant setpoint drift. In addition, setpoint verification requires removal of the associated relay which reduces the availability of the protection function, increases equipment wear, and introduces the potential for error by requiring repeated removal and installation of the equipment. The required Channel Calibration surveillance performed on this instrumentation provides the required setpoint verification and is adequate to ensure the relay instrumentation remains within the required setpoint tolerance.

9. The ISTS SR 3.3.5.3 requires a Channel Calibration be performed for the relay instrumentation addressed by LCO 3.3.5. The ISTS Channel Calibration surveillance requirement includes the Trip Setpoints and Allowable Values for each type of loss of power relay. The proposed ITS SR 3.3.5.2 also specifies a channel calibration be performed on this instrumentation. However, the BVPS proposed SR does not include the trip setpoints or allowable values within the body of the SR. The BVPS specific format proposed for the Loss of power Specification includes a table of requirements (ITS Table 3.3.5-1) similar to the Tables used in ISTS 3.3. (Reactor Trip System) and ISTS 3.3.2 (ESFAS). The proposed ITS Table 3.3.5-1 specifies the required Allowable Values for each type of Loss of Power instrument addressed in the LCO. The Allowable Values specified in proposed Table 3.3.5-1 are consistent with the CTS requirements for this instrumentation. As such, the proposed change maintains the CTS requirements for this instrumentation in a format that is consistent with the Table formats used for other

instrumentation in the ISTS.

The BVPS CTS requirements for this instrumentation are based on a nominal trip setpoint methodology. The nominal trip setpoints associated with the BVPS instrumentation (including the RTS and ESFAS) are specified outside the TS in the Licensing Requirements Manual. The BVPS CTS only specify the Allowable Value for each instrument. As such, the ISTS 3.3.5 Channel Calibration requirements are revised to include only the Allowable Value consistent with the corresponding CTS requirements. In addition, the nominal trip setpoint methodology requires that the trip setpoint of each instrument be maintained within a calibration tolerance that is determined in the setpoint study. Due to the nominal trip setpoint methodology, a required setpoint tolerance for each instrument is established to ensure instrument operability. The nominal trip setpoint methodology requires that during the channel calibration the setpoint be returned to the nominal value. As such, the setpoint tolerance requirement ensures instrument operability by providing a means to monitor and control instrument drift between calibrations. Therefore, specifying two limits in the TS for each setpoint is unnecessary and inconsistent with the current licensing basis.

10. The ISTS 3.3.5 surveillance requirements do not specify the performance of a response time test. Proposed ITS SR 3.3.5.3 specifies that ESF response times be verified at a Frequency of 18 months on a STAGGERED TEST BASIS. The proposed change to the ISTS surveillance requirements is necessary because the instrumentation addressed by ISTS LCO 3.3.5 was moved from the ESFAS Instrumentation specification into ISTS 3.3.5. In the CTS ESFAS specification, ESF response time testing was required in CTS SR 4.3.2.1.3. Individual ESF instrument response times are specified in the Licensing Requirements Manual (LRM) outside the TS. Response times specified in the LRM are assumed in the safety analysis. As such, the proposed change is acceptable because it is necessary to confirm assumptions of the safety analysis and because it maintains the current licensing basis for this instrumentation.

## *ITS 3.3.6 Containment Purge and Exhaust Isolation Instrumentation*

JUSTIFICATION FOR DEVIATION (JFD)

1. The proposed ITS 3.3.6, "Containment Purge and Exhaust Isolation Instrumentation" does not contain requirements for the Unit 1 automatic or manual Purge and Exhaust isolation. Proposed ITS 3.3.6 is designated as only applicable to Unit 2.

   The current BVPS design basis fuel handling accident of record (for both units) does not credit any automatic or manual actuation to mitigate a fuel handling accident when moving fuel assemblies that are not recently irradiated or fuel over assemblies that are not recently irradiated. Recently irradiated fuel is defined in the TS Bases as "...fuel that has occupied part of a critical reactor core within the previous 100 hours." Although BVPS does not currently have a safety analysis that supports moving recently irradiated fuel assemblies, TS requirements have been retained to address the condition of moving recently irradiated fuel assemblies. The retained TS requirements applicable when moving recently irradiated fuel or fuel assemblies over recently irradiated fuel assemblies include Containment Purge and Exhaust System isolation for Unit 2 and Containment Purge and Exhaust System effluent filtration for Unit 1. Proposed ITS 3.9.3, "Containment Penetrations" contains these BVPS unit specific requirements for the Containment Purge and Exhaust System. The current fuel handling accident analysis and CTS requirements for moving recently irradiated fuel were approved by the NRC in Amendments 241 for Unit 1 and 121 for Unit 2 (dated 8/30/01).

   The Unit 1 requirements for Containment Purge and Exhaust isolation are being relocated to the LRM because BVPS Unit 1 can not credit Containment Purge and Exhaust System isolation to mitigate the consequences of a fuel handling accident in containment. Instead, Unit 1 must rely on filtration of the effluent by an operable train of the Supplemental Leakage Collection and Release System (SLCRS) when necessary to mitigate the consequences of a fuel handling accident inside containment. Unit 1 must rely on filtration of the effluent instead of isolation because the Containment Purge and Exhaust System ductwork where the radiation monitors are located is not designed to withstand a seismic event. Although the radiation monitors provide an isolation signal to the purge and exhaust valves to close, no credit for the isolation signal may be taken in the Unit 1 design basis fuel handling accident. As stated in the NRC Safety Evaluation Report (SER) for Unit 1 Amendment 23 dated 12/12/79 (which added the TS requirement for the containment air to be exhausted through SLCRS); "However, since the purge exhaust ductwork inside the containment containing the radiation monitors is non-seismic we have made dose calculations assuming the ductwork and monitors are damaged during a seismic event. In such an event we have assumed there is no containment isolation". Therefore, based on the SER applicable to the Unit 1 Containment Purge and Exhaust System, any Unit 1 safety analysis performed to support the movement of recently irradiated fuel would credit filtration instead of isolation. The proposed ITS reflect the Unit 1 Containment Purge and Exhaust System specific design and licensing bases.

2. The Applicability for ISTS 3.3.6, "Containment Purge and Exhaust Isolation Instrumentation" refers to Table 3.3.6-1. Table 3.3.6-1 specifies the Applicability for each required instrument as Modes 1, 2, 3, and 4 and during movement of recently irradiated fuel assemblies within containment. The BVPS proposed ITS 3.3.6 applicability is stated as "During movement of recently irradiated fuel assemblies within the containment, and During movement of fuel assemblies over recently irradiated fuel assemblies within the containment." The BVPS applicability for Containment Purge and Exhaust Isolation Instrumentation does not include Modes 1, 2, 3, and 4 because in these Modes the BVPS Containment Purge and Exhaust Isolation Valves are maintained deactivated in the closed position (ITS 3.6.3, SR 3.6.3.1). Therefore, automatic isolation instrumentation is not required in these Modes. The proposed ITS applicability is consistent with the CTS applicability for these requirements. The proposed ITS applicability is stated in the more conventional applicability format of the ISTS and proposed Table 3.3.6-1 is revised to eliminate the separate ISTS column for Applicability.

   The BVPS specific version of ISTS 3.3.6 is simpler than the ISTS in that there are less instrument functions and only one Applicable Mode. All the BVPS instrument Functions required operable in ITS 3.3.6-1 have the same Mode of applicability. Therefore, a separate list of applicable Modes in Table 3.3.6-1 is not required and provides no added value. In addition, the proposed ITS applicability helps to simplify and clarify the TS requirements especially Table 3.3.6-1.

3. ISTS Condition B states "One or more Functions with one or more manual or automatic actuation trains inoperable, or two or more radiation monitoring channels inoperable, or Required Action and associated Completion Time of Condition A not met." The Condition is modified by a Note that states "Only applicable in MODE 1, 2, 3, or 4." ISTS Action Condition B is deleted for the BVPS specific ITS 3.3.6 and all subsequent Action Conditions are re-lettered accordingly.

   The ISTS Action Condition is applicable to those plants that require automatic Containment Purge and Exhaust Valve isolation during Modes 1-4. The BVPS CTS and ITS do not require automatic Containment Purge and Exhaust Valve isolation during Modes 1-4. In these Modes, the BVPS TS (ITS 3.6.3, SR 3.6.3.1) require that the Containment Purge and Exhaust Isolation Valves be maintained deactivated in the closed position. Therefore, ISTS Action Condition B is not applicable to BVPS.

4. ISTS Action Condition C is modified by a Note that states "Only applicable during movement of recently irradiated fuel assemblies within containment." The applicability is specified in ITS Table 3.3.6-1. The ISTS Action Condition Note is deleted from the BVPS specific ITS 3.3.6.

   ISTS Action Condition B is only applicable when in Modes 1-4 and ISTS Action Condition C is only applicable during movement of recently irradiated fuel assemblies within containment. The Actions of each of these Conditions are only applicable to the specified plant conditions. The ISTS Action Condition Notes in each of these Conditions are necessary to assure each Action Condition is properly applied according to the plant condition the Actions were designed to address. The affected Notes are not required in the BVPS specific ITS 3.3.6 Action Conditions because the BVPS specific ITS 3.3.6 is only applicable "During movement of recently irradiated fuel assemblies within the containment, and During movement of fuel assemblies over recently irradiated fuel assemblies within the containment." The BVPS version of this TS does not have different plant conditions addressed by different Action Conditions. In the BVPS ITS 3.3.6, all Action Conditions are applicable "During movement of recently irradiated fuel assemblies within the containment, and During movement of fuel assemblies over recently irradiated fuel assemblies within the containment." Therefore, a note to distinguish the plant condition for which the Action Condition was intended is not required.

5. ISTS 3.3.6 Condition C states in part, "One or more Functions with one or more manual or automatic actuation trains inoperable." This ISTS Action addresses automatic actuation trains and manual channels. Other Action Conditions address the required radiation monitor channels. The corresponding BVPS ITS 3.3.6 Condition B states, "One or more manual initiation channels inoperable."

   The proposed change to the ISTS Action Condition is necessary to clarify the differences between the Containment Purge and Exhaust Isolation Instrumentation described in the ISTS and the actual BVPS system. The ISTS 3.3.6 Containment Purge and Exhaust Isolation Instrumentation includes requirements for Solid State Protection System (SSPS) Functions more typically associated with plants that must have Containment Purge and Exhaust Isolation Instrumentation operable in Modes 1-4. These SSPS Functions include requirements for operable trains of Automatic Actuation Logic and Actuation Relays specified in ISTS Table 3.3.6-1. The corresponding BVPS instrumentation for Containment Purge and Exhaust Isolation is not required operable in Modes 1-4 and is not designed to perform the isolation function via the SSPS Actuation Logic and Relays. The BVPS isolation instrumentation consists of two radiation monitor channels and a manual hand switch (channel) for each isolation valve. Therefore, the ISTS Action Condition that refers to "One or more Functions with one or more manual or automatic actuation trains inoperable" is simplified to specify the more BVPS specific condition of "One or more manual initiation channels inoperable." As there are other Action Conditions that address the required radiation monitor channels, the proposed change to this ISTS Action is acceptable because it is consistent with the BVPS system design.

6. ISTS Required Action C.2 states "Enter applicable Conditions and Required Actions of LCO 3.9.4, "Containment Penetrations," for containment purge and exhaust isolation valves made inoperable by isolation instrumentation." The corresponding ITS Required Action B.2 states "Enter applicable Conditions and Required Actions of LCO 3.9.3, "Containment Penetrations," for containment purge and exhaust isolation valves made inoperable by isolation instrumentation." This change is acceptable because the LCOs in Section 3.9, "Refueling Operations," have been renumbered to account for BVPS specific changes made in Section 3.9.

7. ISTS 3.3.6 Action Condition C states in part, "Two or more radiation monitoring channels inoperable." The corresponding BVPS ITS 3.3.6 Condition B states, "Two radiation monitoring channels inoperable."

   The proposed change to the ISTS Action Condition is necessary because BVPS only has two radiation monitor channels associated with the Containment Purge and Exhaust

Isolation system. The ISTS is written to encompass plant designs with several different radiation monitoring channels used for input to the Containment Purge and Exhaust Isolation system. As such, the proposed change more accurately reflects the BVPS system design.

8. ISTS 3.3.6 includes requirements for Solid State Protection System (SSPS) Functions more typically associated with plants that must have Containment Purge and Exhaust Isolation Instrumentation operable in Modes 1-4. These SSPS Functions include requirements for two operable trains of Automatic Actuation Logic and Actuation Relays specified in ISTS Table 3.3.6-1 (Function 2) and SRs 3.3.6.2, 3.3.6.3, and 3.3.6.5 applicable to Function 2 in ISTS Table 3.3.6-1. SRs 3.3.6.2, 3.3.6.3, and 3.3.6.5 require the performance of TS defined tests (TS Section 1.0) for ACTUATION LOGIC, MASTER RELAYS, and the SLAVE RELAYS. These TS defined tests are specific to the SSPS Automatic Actuation Logic and Actuation Relays Functions. The design of the BVPS Containment Purge and Exhaust Isolation Instrumentation does not include the SSPS Functions described in the ISTS. Therefore, Function 2 on ISTS Table 3.3.6-1 and the associated surveillances (SRs 3.3.6.2, 3.3.6.3, and 3.3.6.5) are deleted from the BVPS specific version of ISTS 3.3.6. The remaining Function and surveillances are renumbered accordingly. The proposed change to the ISTS maintains the TS requirements for this instrumentation more consistent with the CTS and with the BVPS specific design.

9. ISTS Table 3.3.6-1 specifies the Containment Purge and Exhaust Isolation Instrumentation Functions required operable. The ISTS Table includes Functions 3.b, 3.c, 3.d and 4 for additional radiation monitors and the Containment Isolation signal - Phase A. The corresponding BVPS specific ITS Table 3.3.6-1 does not include these additional Containment Purge and Exhaust Isolation Instrumentation Functions. This change is acceptable because the BVPS Containment Purge and Exhaust Isolation Instrumentation does not include these additional Functions. The proposed change to the ISTS makes the BVPS specific version of this TS more consistent with the CTS requirements and the design of the BVPS Containment Purge and Exhaust Isolation Instrumentation system.

10. ISTS 3.3.6 requires two channels of manual initiation to be operable. The ISTS requirement for manual initiation is revised to be consistent with the BVPS Unit 2 manual switch design. BVPS does not have a train related manual initiation switch for the Containment Purge and Exhaust Valve isolation function. The BVPS Containment Purge and Exhaust system isolation valves are each operated manually by their respective control switches. As such, the BVPS version of ISTS 3.3.6 requires one channel of manual initiation per valve to be operable instead of the ISTS requirement for two channels of manual initiation.

# *ITS 3.3.7 Control Room Emergency Ventilation System (CREVS) Actuation Instrumentation*

JUSTIFICATION FOR DEVIATION (JFD)

1. ISTS Conditions A and B have a bracketed Note for the associated Required Actions. The Note states "Place in the toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable." The BVPS design no longer includes a toxic gas mode of operation for the control room ventilation. Therefore, the Note is not applicable to BVPS and is deleted for both Conditions from the BVPS specific implementation of the ISTS.
2. ISTS Required Action B.2 offers an option to place both CREVS trains in service. Action B.2 is deleted from the BVPS specific implementation of the ISTS. The BVPS design of the emergency pressurization and filtration system includes a preferred fan interlock scheme that prevents more than one ventilation fan from running at the same time. Thus, BVPS can not utilize the ISTS Action option to run both trains of CREVS at the same time.
3. ISTS Action Condition D addresses the applicability of fuel movement involving recently irradiated fuel. The ISTS Condition and Required Action are revised to be consistent with the BVPS specific Applicability for fuel movement involving recently irradiated fuel. The BVPS CTS requirements, which are based on the current safety analysis for a fuel handling accident, specify not only the movement of recently irradiated fuel but include fuel movement over recently irradiated fuel. The proposed changes to the ISTS Action Condition make the BVPS specific implementation of these requirements consistent with the corresponding CTS requirements.
4. ISTS SRs 3.3.7.3, 3.3.7.4, and 3.3.7.5 require the performance of the Solid State Protection System (SSPS) defined surveillance tests for actuation logic, master relays, and slave relay tests at various frequencies. The surveillances are applicable to Function 2 on ISTS Table 3.3.7-1, "Automatic Actuation Logic and Actuation Relays." The ISTS includes Function 2 on Table 3.3.7-1 and the associated surveillance requirements for those plants designed to utilize the SSPS Logic, Master and Slave Relays for the high radiation and manual actuation functions listed on Table 3.3.7-1. The BVPS proposed ITS 3.3.7 does not include Function 2 on Table 3.3.7-1 or the associated SSPS surveillance tests. The BVPS control room ventilation design does not utilize the SSPS circuitry described by Function 2 on Table 3.3.7-1 for the high radiation or manual actuation functions. The BVPS CIB instrumentation does utilize the SSPS for actuation of the CREVS but the requirements for this instrumentation (including all surveillances) are specified in ITS 3.3.2, ESFAS Instrumentation" as denoted on ITS Table 3.3.7-1. Therefore, the ISTS Function 2 and associated SSPS surveillance tests are not required to verify the operability of the BVPS control room ventilation instrumentation and are deleted from the proposed BVPS specific ITS 3.3.7. Subsequent SRs and Functions are renumbered as necessary.
5. ISTS Table 3.3.7-1 specifies the Modes of operation where the instrument Functions are

required operable. The ISTS Table specifies Modes 5 and 6 for the operability of manual and radiation instrument channels. The Mode 5 and 6 applicability is in addition to the Modes 1-4 applicability and the applicability for fuel movement involving recently irradiated fuel. The ISTS bases explains that the Mode 5 and 6 requirement is to address the additional design basis accident of a waste gas decay tank rupture. In some plant designs, the waste gas decay tanks are located such that a failure of the tank could result in excessive control room doses. For such plants, the control room ventilation system must be capable of emergency mode of operation in Modes 5 and 6.

The BVPS specific analyses for waste gas decay tank rupture does not require the control room ventilation be placed in the emergency mode of operation to limit the dose. The BVPS waste decay tanks are not located where a rupture would pose a challenge to the dose requirements for the control room. Therefore, the ISTS Mode applicability of Modes 5 and 6 is not applicable to BVPS and is deleted from the BVPS specific version of ITS 3.3.7. In addition, the elimination of this applicability is consistent with the corresponding CTS requirements for the containment ventilation system.

6. ISTS Table 3.3.7-1 specifies the Modes of operation where the instrument Functions are required operable. The ISTS Table specifies Modes 1 through 4 for the operability of radiation instrument channels. The Mode 1-4 applicability requirement for the radiation monitor instrument channels is deleted from the BVPS specific ITS 3.3.7. The current BVPS safety analyses do not assume the operation of the radiation monitors for actuation of the control room ventilation emergency mode of operation (i.e., isolation, pressurization, and filtration) for any design basis accident. The current safety analyses for all applicable design basis accidents (except LOCA) assume manual initiation of the control room ventilation emergency mode of operation (including damper isolation, and start of the pressurization and filtration fan system). The LOCA accident analysis assumes an automatic control room ventilation system isolation on a Containment Isolation - Phase B (CIB) signal and subsequent manual initiation of the filtration and pressurization ventilation fan system. Manual initiation of the BVPS fan systems is specifically assumed in all analysis to permit the use of the Unit 1 filtration and pressurization ventilation fan system. The Unit 1 fan system has no automatic actuation features. Therefore, the LOCA safety analysis contains the only assumption requiring an automatic control room ventilation system actuation (i.e., control room isolation (intake and exhaust) on a CIB signal). However, in order to support the manually operated Unit 1 pressurization ventilation fan system, the LOCA analysis does not assume an automatic initiation of the control room filtration and pressurization fan system. The BVPS proposed ITS 3.3.7 includes requirements to assure the manual initiation function is maintained operable in Modes 1 through 4. In addition, the BVPS proposed ITS 3.3.2, "ESFAS," includes the necessary requirements to assure the CIB actuation signal is maintained operable. As such, requirements for the automatic initiation function of the BVPS control room area radiation monitors are not required in the TS to support any current safety analysis assumptions regarding an automatic initiation of control room isolation or pressurization and filtration. However, the radiation monitors are retained in the BVPS ITS 3.3.7 in case they are needed to support fuel movement involving recently irradiated fuel. Although, no specific analysis has been performed to support or permit the movement of recently irradiated fuel at BVPS, requirements to support fuel movement involving recently irradiated fuel are retained in

the proposed BVPS specific ITS consistent with the guidance of the ISTS.

7. The ISTS Table 3.3.7-1 specifies two types of radiation monitors (Control Room Atmosphere and Control Room Air Intake). The BVPS design only includes a single type of radiation monitor (Control Room Area). Each BVPS Unit has two control room area monitors. ISTS Table 3.3.7-1 is revised to conform to the BVPS design. The ISTS requirements for Air Intake monitors are deleted. In addition, the ISTS Control Room Atmosphere monitors are renamed Control Room Area monitors to more clearly define the required instrumentation consistent with the BVPS design.

8. ISTS Table 3.3.7-1 specifies the Instrument Functions required operable for the CREVS. The ISTS specifies Safety Injection (SI) as a required CREVS initiation signal. The BVPS design does not use SI to place the control room ventilation in the emergency pressurization mode of operation. The BVPS units use the Containment Isolation - Phase B (CIB) signal to place the control room ventilation in the emergency pressurization mode of operation. The proposed BVPS specific Table 3.3.7-1 is revised to conform to the BVPS design (i.e., SI is replaced with CIB). The requirements for the CIB Function are specified in ITS 3.3.2, "ESFAS Instrumentation," specifically, in Table 3.3.2-1 Function 3.b.

9. ISTS Table 3.3.7-1 specifies the Modes of operation where the instrument Functions are required operable. The ISTS Table Note (a) specifies "During movement of [recently] irradiated fuel assemblies." The corresponding BVPS CTS Applicability includes the additional requirement of "During movement of fuel assemblies over recently irradiated fuel assemblies." The ISTS applicability is revised to match the corresponding CTS Applicability. The proposed ITS Applicability is "During movement of recently irradiated fuel assemblies and during movement of fuel assemblies over recently irradiated fuel assemblies." The CTS applicability is a more comprehensive requirement than the corresponding ISTS Applicability that provides additional assurance the systems and components necessary to mitigate a fuel handling accident are available when the potential for a fuel handling accident involving recently irradiated fuel exists.

10. ISTS 3.3.7 contains the requirements for the CREVS Actuation instrumentation. ISTS 3.7.10 contains the requirements for the CREVS mechanical components (i.e., fans, filters, and isolation dampers). ISTS 3.3.7 Required Action B.1.2 states "Enter applicable Conditions and Required Actions for one CREVS train made inoperable by inoperable CREVS actuation instrumentation. The ISTS bases for this Action clarifies the applicable required actions to be entered are the Actions of LCO 3.7.10 for the affected CREVS components. The corresponding BVPS proposed ITS 3.3.7 required action B.2 is revised to clarify that the Action is referring the user to LCO 3.7.10, not 3.3.7, consistent with the bases explanation of the Action. The addition of this information to the Action eliminates the need for the user to refer to the bases for the clarification of what CREVS Actions are to be entered. The addition of this clarification is consistent with the presentation of this type of requirement in other ISTS Actions (e.g., ISTS 3.7.8 Action Condition A notes). The proposed change does not introduce a technical change to the ISTS and will help to clarify the intent of the Action.

## *3.3.8 Fuel Building Air Cleanup System (FBACS) Actuation Instrumentation*

JUSTIFICATION FOR DEVIATION (JFD)

1. ISTS LCO 3.3.8 Fuel Building Air Cleanup System (FBACS) Actuation Instrumentation specifies the LCO, Actions, and Surveillance Requirements for instrumentation used to automatically initiate ventilation systems that ensure radioactive releases from analyzed events (fuel handling accidents or fission products released after a LOCA) are filtered and adsorbed prior to exhausting to the environment. The current BVPS safety analyses associated with the radioactive releases from a LOCA or from a fuel handling accident do not assume the automatic initiation of any systems or components to mitigate the release. As such, the BVPS CTS (and proposed ITS) do not include any requirements for actuation instrumentation similar to the ISTS FBACS Actuation Instrumentation. The CTS (3.9.12) and BVPS proposed ITS (3.7.12) do include requirements for a ventilation system with filtration capability (Supplemental Leak Collection and Release System) to be in operation during fuel movement involving "recently" irradiated fuel. As the CTS and corresponding ITS require this system to be in operation providing the required filtration during fuel movement involving "recently" irradiated fuel, no automatic system actuation is necessary or required in the CTS or ITS to address a fuel handling accident involving recently irradiated fuel. The elimination of this ISTS LCO for automatic actuation instrumentation is acceptable because automatic initiation of filtered ventilation is not required to mitigate the radioactive releases due to a LOCA or from fuel handling accidents resulting from the movement of irradiated fuel or involving "recently" irradiated fuel.

## *ITS 3.3.8 Boron Dilution Detection Instrumentation*

JUSTIFICATION FOR DEVIATION (JFD)

1. ISTS 3.3.9, "Boron Dilution Protection System" (BDPS), is not applicable to the BVPS design or licensing bases. The BDPS as described in the ISTS is a two train system that provides automatic protection against boron dilution accidents by switching the charging pump suction to the RWST upon a specified high flux signal. Such a system is not part of the BVPS plant design. The BVPS units rely on the isolation of unborated water source valves to prevent boron dilution events in Modes 4, 5, and 6 and detection of the event in Mode 3 in time for operator action to mitigate the event. (UFSAR Chapter 14 (Unit 1) and UFSAR Chapter 15 (Unit 2)). The requirements to maintain the unborated water source valves isolated in Modes 4, 5, and 6 is retained in the proposed BVPS ITS in Section 3.1 (ITS, "3.1.8, "Unborated Water Source Isolation Valves"). In addition, there are separate TS requirements for source range indication in Section 3.9, "Refueling" applicable in Mode 6.

   However, the current BVPS TS (CTS 3.3.1.1, Reactor Trip System Instrumentation) does require a single channel of source range instrumentation operable when the rods are fully inserted and not capable of being withdrawn (in Modes 3, 4, and 5). This requirement provides the only TS required means to monitor core reactivity under the specified plant condition. The requirement includes Mode 3 where the monitoring function serves as the only "required" means to detect a boron dilution event in progress when rods are fully inserted and not capable of being withdrawn. As the CTS requirement for a single operable source range monitoring channel was not used for reactor trip purposes, it was not retained in the proposed BVPS ITS 3.3.1, "Reactor Trip System" LCO. Although the BVPS source range channel does not actuate a system designed to mitigate a boron dilution event, it does provide the only TS required means of directly indicating neutron flux in the specified Modes (especially in Mode 3 where the monitoring function may be relied on to detect a boron dilution event in progress). As such, BVPS is proposing to retain in the ITS the CTS requirement for a single operable source range indication channel when the rods are fully inserted and not capable of being withdrawn (in Modes 3, 4, and 5). As the ISTS does not provide a specific LCO for this source range indication requirement, and it no longer belongs in the RTS Specification, BVPS is proposing to modify the functionally similar ISTS 3.3.9, "Boron Dilution Protection System" specification and bases to accommodate the BVPS specific requirement for this source range indication.

2. ISTS LCO 3.3.8 is not applicable to BVPS and is not used. As such, ISTS LCO 3.3.9 is renumbered to ITS LCO 3.3.8 to reflect the deletion of the ISTS LCO 3.3.8. The renumbering includes the SRs.

3. ISTS SR 3.3.9.2 requires a CHANNEL OPERATIONAL TEST (COT). COTs are only necessary to verify the required alarm or trip functions of an instrumentation channel are operable. The proposed BVPS Source Range channel requirement is for indication only. This is based on the CTS requirements for this instrumentation in CTS 3.3.1.1, "RTS Instrumentation. Therefore, proposed ITS 3.3.8 only requires the indication function

provided by the Source Range channel to be operable. TS required indication instrumentation is verified operable by Channel Checks and Channel Calibrations. Proposed BVPS ITS 3.3.8 continues to require Channel Check and Channel Calibration surveillances to assure the indicating channel operability. Therefore, ISTS SR 3.3.9.2 is not required to confirm the operability of an instrument channel required for indication only and is deleted. The next SR is renumbered to ITS SR 3.3.8.2.

4. As described in JFD #1 above. ISTS 3.3.9 pertains to the BDPS, which is not part of the BVPS design. The ISTS 3.3.9 LCO, Applicability and Action requirements are revised to incorporate the BVPS CTS requirements applicable to the single source range indication channel being addressed by the BVPS specific version of this Specification. The proposed LCO, Applicability, and Actions are consistent with the CTS 3.3.1.1, RTS, requirements for this source range indication channel. As the source range indication only requirements are not part of the RTS, they are being incorporated into the functionally similar ISTS 3.3.9 to replace the ISTS BDPS requirements.

ENCLOSURE 2

***CHANGES TO THE ISTS BASES***

MARKUP TO SHOW BVPS PLANT SPECIFIC DIFFERENCES &

JUSTIFICATION FOR DEVIATION (JFD)

FROM THE STANDARD BASES

Introduction

This enclosure contains the markup of the Improved Standard Technical Specifications (ISTS) Bases to show the changes necessary to make the ISTS Bases document specific to BVPS Units 1 and 2. Changes to the ISTS Bases are identified with a number. The number is associated with a JFD that describes the reason for the change. The markups of the ISTS Bases are followed by a document containing the numbered JFDs for the changes made to the ISTS Bases. Not every change to the ISTS Bases is identified and explained by a JFD. Changes that simply insert current Technical Specification (CTS) information into bracketed (optional) ISTS text are not typically identified with a separate JFD. Bracketed ISTS text identifies specific text that is to be replaced with the corresponding CTS information. Therefore, such changes to the ISTS Bases are self-explanatory and represent the simple transference of CTS requirements to the ISTS. Other changes to the ISTS (i.e., less obvious changes) are described by a JFD.

As the BVPS Unit 1 & 2 Technical Specifications (TS) are being combined into a single set of TS, one markup of each ISTS Bases is provided for both Unit 1 and 2. Unit differences are identified in each ISTS Bases.

In addition, the Bases in this enclosure are marked (where applicable) to show the changes to the standard text resulting from the Industry/NRC TS Task Force (TSTF) process. The TSTF revisions to the standard are marked-up and identified with the applicable TSTF number (i.e., TSTF-03, TSTF-19, etc.). Each TSTF change has its own justification associated with it as part of the Industry/NRC process. The TSTF justifications are not repeated in the BVPS ISTS conversion documentation.

B 3.3 INSTRUMENTATION

B 3.3.3 Post Accident Monitoring (PAM) Instrumentation

1

BASES

BACKGROUND

INSERT 1

~~The primary purpose of the PAM instrumentation is to display unit variables that provide information required by the control room operators during accident situations. This information provides the necessary support for the operator to take the manual actions for which no automatic control is provided and that are required for safety systems to accomplish their safety functions for Design Basis Accidents (DBAs).~~

~~The OPERABILITY of the accident monitoring instrumentation ensures that there is sufficient information available on selected unit parameters to monitor and to assess unit status and behavior following an accident.~~

~~The availability of accident monitoring instrumentation is important so that responses to corrective actions can be observed and the need for, and magnitude of, further actions can be determined. These essential instruments are identified by unit specific documents (Ref. 1) addressing the recommendations of Regulatory Guide 1.97 (Ref. 2) as required by Supplement 1 to NUREG-0737 (Ref. 3).~~

~~The instrument channels required to be OPERABLE by this LCO include two classes of parameters identified during unit specific implementation of Regulatory Guide 1.97 as Type A and Category I variables.~~

~~Type A variables are included in this LCO because they provide the primary information required for the control room operator to take specific manually controlled actions for which no automatic control is provided, and that are required for safety systems to accomplish their safety functions for DBAs. Because the list of Type A variables differs widely between units, Table 3.3.3-1 in the accompanying LCO contains no examples of Type A variables, except for those that may also be Category I variables.~~

~~Category I variables are the key variables deemed risk significant because they are needed to:~~

~~Determine whether other systems important to safety are performing their intended functions,~~

~~Provide information to the operators that will enable them to determine the likelihood of a gross breach of the barriers to radioactivity release, and~~

BASES

BACKGROUND (continued)

1

~~Provide information regarding the release of radioactive materials to allow for early indication of the need to initiate action necessary to protect the public, and to estimate the magnitude of any impending threat.~~

~~These key variables are identified by the unit specific Regulatory Guide 1.97 analyses (Ref. 1). These analyses identify the unit specific Type A and Category I variables and provide justification for deviating from the NRC proposed list of Category I variables.~~

**~~- REVIEWER'S NOTE -~~**

~~Table 3.3.3-1 provides a list of variables typical of those identified by the unit specific Regulatory Guide 1.97 analyses. Table 3.3.3-1 in unit specific Technical Specifications (TS) shall list all Type A and Category I variables identified by the unit specific Regulatory Guide 1.97 analyses, as amended by the NRC's Safety Evaluation Report (SER).~~

~~The specific instrument Functions listed in Table 3.3.3-1 are discussed in the LCO section.~~

APPLICABLE SAFETY ANALYSES

1

INSERT 2

~~The PAM instrumentation ensures the operability of Regulatory Guide 1.97 Type A and Category I variables so that the control room operating staff can:~~

~~Perform the diagnosis specified in the emergency operating procedures (these variables are restricted to preplanned actions for the primary success path of DBAs), e.g., loss of coolant accident (LOCA),~~

~~Take the specified, pre-planned, manually controlled actions, for which no automatic control is provided, and that are required for safety systems to accomplish their safety function,~~

~~Determine whether systems important to safety are performing their intended functions,~~

~~Determine the likelihood of a gross breach of the barriers to radioactivity release,~~

~~Determine if a gross breach of a barrier has occurred, and~~

BASES

APPLICABLE SAFETY ANALYSES (continued)

Initiate action necessary to protect the public and to estimate the magnitude of any impending threat.

PAM instrumentation that meets the definition of Type A in Regulatory Guide 1.97 satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). Category I, non-Type A, instrumentation must be retained in TS because it is intended to assist operators in minimizing the consequences of accidents. Therefore, Category I, non-Type A, variables are important for reducing public risk.

1

LCO

INSERT 3

The PAM instrumentation LCO provides OPERABILITY requirements for Regulatory Guide 1.97 Type A monitors, which provide information required by the control room operators to perform certain manual actions specified in the unit Emergency Operating Procedures. These manual actions ensure that a system can accomplish its safety function, and are credited in the safety analyses. Additionally, this LCO addresses Regulatory Guide 1.97 instruments that have been designated Category I, non-Type A.

The OPERABILITY of the PAM instrumentation ensures there is sufficient information available on selected unit parameters to monitor and assess unit status following an accident. This capability is consistent with the recommendations of Reference 1.

LCO 3.3.3 requires two OPERABLE channels for most Functions. Two OPERABLE channels ensure no single failure prevents operators from getting the information necessary for them to determine the safety status of the unit, and to bring the unit to and maintain it in a safe condition following an accident.

Furthermore, OPERABILITY of two channels allows a CHANNEL CHECK during the post accident phase to confirm the validity of displayed information. More than two channels may be required at some units if the unit specific Regulatory Guide 1.97 analyses (Ref. 1) determined that failure of one accident monitoring channel results in information ambiguity (that is, the redundant displays disagree) that could lead operators to defeat or fail to accomplish a required safety function.

The exception to the two channel requirement is Containment Isolation Valve (CIV) Position. In this case, the important information is the status of the containment penetrations. The LCO requires one position indicator for each active CIV. This is sufficient to redundantly verify the isolation status of each isolable penetration either via indicated status of the active

BASES

LCO (continued)

valve and prior knowledge of a passive valve, or via system boundary status. If a normally active CIV is known to be closed and deactivated, position indication is not needed to determine status. Therefore, the position indication for valves in this state is not required to be OPERABLE.

Table 3.3.3-1 provides a list of variables typical of those identified by the unit specific Regulatory Guide 1.97 (Ref. 1) analyses. Table 3.3.3-1 in unit specific TS should list all Type A and Category I variables identified by the unit specific Regulatory Guide 1.97 analyses, as amended by the NRC's SER.

1

Type A and Category I variables are required to meet Regulatory Guide 1.97 Category I (Ref. 2) design and qualification requirements for seismic and environmental qualification, single failure criterion, utilization of emergency standby power, immediately accessible display, continuous readout, and recording of display.

Listed below are discussions of the specified instrument Functions listed in Table 3.3.3-1. These discussions are intended as examples of what should be provided for each Function when the unit specific list is prepared.

1, 2. Power Range and Source Range Neutron Flux

Power Range and Source Range Neutron Flux indication is provided to verify reactor shutdown. *The two ranges are necessary to cover the full* range of flux that may occur post accident.

Neutron flux is used for accident diagnosis, verification of subcriticality, and diagnosis of positive reactivity insertion.

3, 4. Reactor Coolant System (RCS) Hot and Cold Leg Temperatures

RCS Hot and Cold Leg Temperatures are Category I variables provided for verification of core cooling and long term surveillance.

RCS hot and cold leg temperatures are used to determine RCS subcooling margin. RCS subcooling margin will allow termination of safety injection (SI), if still in progress, or reinitiation of SI if it has been stopped. RCS subcooling margin is also used for unit stabilization and cooldown control.

BASES

LCO (continued)

1

In addition, RCS cold leg temperature is used in conjunction with RCS hot leg temperature to verify the unit conditions necessary to establish natural circulation in the RCS.

Reactor outlet temperature inputs to the Reactor Protection System are provided by two fast response resistance elements and associated transmitters in each loop. The channels provide indication over a range of 32 °F to 700 °F.

5. Reactor Coolant System Pressure (Wide Range)

RCS wide range pressure is a Category I variable provided for verification of core cooling and RCS integrity long term surveillance.

RCS pressure is used to verify delivery of SI flow to RCS from at least one train when the RCS pressure is below the pump shutoff head. RCS pressure is also used to verify closure of manually closed spray line valves and pressurizer power operated relief valves (PORVs).

In addition to these verifications, RCS pressure is used for determining RCS subcooling margin. RCS subcooling margin will allow termination of SI, if still in progress, or reinitiation of SI if it has been stopped. RCS pressure can also be used:

- to determine whether to terminate actuated SI or to reinitiate stopped SI,
- to determine when to reset SI and shut off low head SI,
- to manually restart low head SI,
- as reactor coolant pump (RCP) trip criteria, and
- to make a determination on the nature of the accident in progress and where to go next in the procedure.

RCS subcooling margin is also used for unit stabilization and cooldown control.

RCS pressure is also related to three decisions about depressurization. They are:

LCO (continued)

1

- to determine whether to proceed with primary system depressurization,
- to verify termination of depressurization, and
- to determine whether to close accumulator isolation valves during a controlled cooldown/depressurization.

A final use of RCS pressure is to determine whether to operate the pressurizer heaters.

In some units, RCS pressure is a Type A variable because the operator uses this indication to monitor the cooldown of the RCS following a steam generator tube rupture (SGTR) or small break LOCA. Operator actions to maintain a controlled cooldown, such as adjusting steam generator (SG) pressure or level, would use this indication. Furthermore, RCS pressure is one factor that may be used in decisions to terminate RCP operation.

6. <u>Reactor Vessel Water Level</u>

Reactor Vessel Water Level is provided for verification and long term surveillance of core cooling. It is also used for accident diagnosis and to determine reactor coolant inventory adequacy.

The Reactor Vessel Water Level Monitoring System provides a direct measurement of the collapsed liquid level above the fuel alignment plate. The collapsed level represents the amount of liquid mass that is in the reactor vessel above the core. Measurement of the collapsed water level is selected because it is a direct indication of the water inventory.

7. <u>Containment Sump Water Level (Wide Range)</u>

Containment Sump Water Level is provided for verification and long term surveillance of RCS integrity.

Containment Sump Water Level is used to determine:

- containment sump level accident diagnosis,
- when to begin the recirculation procedure, and

BASES

LCO (continued)

1

- whether to terminate SI, if still in progress.

8. Containment Pressure (Wide Range)

Containment Pressure (Wide Range) is provided for verification of RCS and containment OPERABILITY.

Containment pressure is used to verify closure of main steam isolation valves (MSIVs), and containment spray Phase B isolation when High-3 containment pressure is reached.

9. Containment Isolation Valve Position

CIV Position is provided for verification of Containment OPERABILITY, and Phase A and Phase B isolation.

When used to verify Phase A and Phase B isolation, the important information is the isolation status of the containment penetrations. The LCO requires one channel of valve position indication in the control room to be OPERABLE for each active CIV in a containment penetration flow path, i.e., two total channels of CIV position indication for a penetration flow path with two active valves. For containment penetrations with only one active CIV having control room indication, Note (b) requires a single channel of valve position indication to be OPERABLE. This is sufficient to redundantly verify the isolation status of each isolable penetration either via indicated status of the active valve, as applicable, and prior knowledge of a passive valve, or via system boundary status. If a normally active CIV is known to be closed and deactivated, position indication is not needed to determine status. Therefore, the position indication for valves in this state is not required to be OPERABLE. Note (a) to the Required Channels states that the Function is not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. Each penetration is treated separately and each penetration flow path is considered a separate function. Therefore, separate Condition entry is allowed for each inoperable penetration flow path.

10. Containment Area Radiation (High Range)

Containment Area Radiation is provided to monitor for the potential of significant radiation releases and to provide release assessment

BASES

LCO (continued)

for use by operators in determining the need to invoke site emergency plans. Containment radiation level is used to determine if a high energy line break (HELB) has occurred, and whether the event is inside or outside of containment.

1

11. Hydrogen Monitors

Hydrogen Monitors are provided to detect high hydrogen concentration conditions that represent a potential for containment breach from a hydrogen explosion. This variable is also important in verifying the adequacy of mitigating actions.

12. Pressurizer Level

Pressurizer Level is used to determine whether to terminate SI, if still in progress, or to reinitiate SI if it has been stopped. Knowledge of pressurizer water level is also used to verify the unit conditions necessary to establish natural circulation in the RCS and to verify that the unit is maintained in a safe shutdown condition.

13. Steam Generator Water Level (Wide Range)

SG Water Level is provided to monitor operation of decay heat removal via the SGs. The Category I indication of SG level is the extended startup range level instrumentation. The extended startup range level covers a span of ≥ 6 inches to ≤ 394 inches above the lower tubesheet. The measured differential pressure is displayed in inches of water at 68°F.

Temperature compensation of this indication is performed manually by the operator. Redundant monitoring capability is provided by two trains of instrumentation. The uncompensated level signal is input to the unit computer, a control room indicator, and the Emergency Feedwater Control System.

SG Water Level (Wide Range) is used to:

- identify the faulted SG following a tube rupture,
- verify that the intact SGs are an adequate heat sink for the reactor,

BASES

LCO (continued)

1

- determine the nature of the accident in progress (e.g., verify an SGTR), and
- verify unit conditions for termination of SI during secondary unit HELBs outside containment.

At some units, operator action is based on the control room indication of SG level. The RCS response during a design basis small break LOCA depends on the break size. For a certain range of break sizes, the boiler condenser mode of heat transfer is necessary to remove decay heat. Extended startup range level is a Type A variable because the operator must manually raise and control SG level to establish boiler condenser heat transfer. Operator action is initiated on a loss of subcooled margin. Feedwater flow is increased until the indicated extended startup range level reaches the boiler condenser setpoint.

14. Condensate Storage Tank (CST) Level

CST Level is provided to ensure water supply for auxiliary feedwater (AFW). The CST provides the ensured safety grade water supply for the AFW System. The CST consists of two identical tanks connected by a common outlet header. Inventory is monitored by a 0 inch to 144 inch level indication for each tank. CST Level is displayed on a control room indicator, strip chart recorder, and unit computer. In addition, a control room annunciator alarms on low level.

At some units, CST Level is considered a Type A variable because the control room meter and annunciator are considered the primary indication used by the operator.

The DBAs that require AFW are the loss of electric power, steam line break (SLB), and small break LOCA.

The CST is the initial source of water for the AFW System. However, as the CST is depleted, manual operator action is necessary to replenish the CST or align suction to the AFW pumps from the hotwell.

BASES

LCO (continued)

1

15, 16, 17, 18. Core Exit Temperature

Core Exit Temperature is provided for verification and long term surveillance of core cooling.

An evaluation was made of the minimum number of valid core exit thermocouples (CET) necessary for measuring core cooling. The evaluation determined the reduced complement of CETs necessary to detect initial core recovery and trend the ensuing core heatup. The evaluations account for core nonuniformities, including incore effects of the radial decay power distribution, excore effects of condensate runback in the hot legs, and nonuniform inlet temperatures. Based on these evaluations, adequate core cooling is ensured with two valid Core Exit Temperature channels per quadrant with two CETs per required channel. The CET pair are oriented radially to permit evaluation of core radial decay power distribution. Core Exit Temperature is used to determine whether to terminate SI, if still in progress, or to reinitiate SI if it has been stopped. Core Exit Temperature is also used for unit stabilization and cooldown control.

Two OPERABLE channels of Core Exit Temperature are required in each quadrant to provide indication of radial distribution of the coolant temperature rise across representative regions of the core. Power distribution symmetry was considered in determining the specific number and locations provided for diagnosis of local core problems. Therefore, two randomly selected thermocouples are not sufficient to meet the two thermocouples per channel requirement in any quadrant. The two thermocouples in each channel must meet the additional requirement that one is located near the center of the core and the other near the core perimeter, such that the pair of Core Exit Temperatures indicate the radial temperature gradient across their core quadrant. Unit specific evaluations in response to Item II.F.2 of NUREG-0737 (Ref. 3) should have identified the thermocouple pairings that satisfy these requirements. Two sets of two thermocouples ensure a single failure will not disable the ability to determine the radial temperature gradient.

19. Auxiliary Feedwater Flow

AFW Flow is provided to monitor operation of decay heat removal via the SGs.

BASES

LCO (continued)

1

The AFW Flow to each SG is determined from a differential pressure measurement calibrated for a range of 0 gpm to 1200 gpm. Redundant monitoring capability is provided by two independent trains of instrumentation for each SG. Each differential pressure transmitter provides an input to a control room indicator and the unit computer. Since the primary indication used by the operator during an accident is the control room indicator, the PAM specification deals specifically with this portion of the instrument channel.

AFW flow is used three ways:

- to verify delivery of AFW flow to the SGs,
- to determine whether to terminate SI if still in progress, in conjunction with SG water level (narrow range), and
- to regulate AFW flow so that the SG tubes remain covered.

At some units, AFW flow is a Type A variable because operator action is required to throttle flow during an SLB accident to prevent the AFW pumps from operating in runout conditions. AFW flow is also used by the operator to verify that the AFW System is delivering the correct flow to each SG. However, the primary indication used by the operator to ensure an adequate inventory is SG level.

1

except for the power range instrumentation which is only required OPERABLE in MODES 1 and 2.

APPLICABILITY

The PAM instrumentation LCO is applicable in MODES 1, 2, and 3. These variables are related to the diagnosis and pre-planned actions required to mitigate DBAs. The applicable DBAs are assumed to occur in MODES 1, 2, and 3. In MODES 4, 5, and 6, unit conditions are such that the likelihood of an event that would require PAM instrumentation is low; therefore, the PAM instrumentation is not required to be OPERABLE in these MODES.

ACTIONS

TSTF-359

Note 1 has been added in the ACTIONS to exclude the MODE change restriction of LCO 3.0.4. This exception allows entry into the applicable MODE while relying on the ACTIONS even though the ACTIONS may eventually require unit shutdown. This exception is acceptable due to the passive function of the instruments, the operator's ability to respond to an accident using alternate instruments and methods, and the low probability of an event requiring these instruments.

BASES

ACTIONS (continued)

TSTF-359 A

Note 2 has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed on Table 3.3.3-1. The Completion Time(s) of the inoperable channel(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.

1

INSERT 4

A.1

Condition A applies when one or more Functions have one required channel that is inoperable. Required Action A.1 requires restoring the inoperable channel to OPERABLE status within 30 days. The 30 day Completion Time is based on operating experience and takes into account the remaining OPERABLE channel (or in the case of a Function that has only one required channel, other non-Regulatory Guide 1.97 instrument channels to monitor the Function), the passive nature of the instrument (no critical automatic action is assumed to occur from these instruments), and the low probability of an event requiring PAM instrumentation during this interval.

B.1

within the following 14 days.

5 TSTF-369

2

Condition B applies when the Required Action and associated Completion Time for Condition A are not met. This Required Action specifies initiation of actions in Specification 5.6.7, which requires a written report to be submitted to the NRC ~~immediately~~. This report discusses the results of the root cause evaluation of the inoperability and identifies proposed restorative actions. This action is appropriate in lieu of a shutdown requirement since alternative actions are identified before loss of functional capability, and given the likelihood of unit conditions that would require information provided by this instrumentation.

1

INSERT 5

C.1

Condition C applies when one or more Functions have two inoperable required channels (i.e., two channels inoperable in the same Function). Required Action C.1 requires restoring one channel in the Function(s) to OPERABLE status within 7 days. The Completion Time of 7 days is based on the relatively low probability of an event requiring PAM instrument operation and the availability of alternate means to obtain the required information. Continuous operation with two required channels inoperable in a Function is not acceptable because the alternate indications may not fully meet all performance qualification requirements

BASES

ACTIONS (continued)

applied ~~to the PAM~~ instrumentation. Therefore, requiring ~~restoration of~~ one inoperable channel of the ~~Function~~ limits the ~~risk that~~ the PAM Function will be in a degraded condition ~~should an accident occur~~. Condition C is modified by a Note that ~~excludes~~ hydrogen monitor channels.

1

INSERT 6

D.1

- REVIEWER'S NOTE -

Implementation of WCAP-14986, Rev 1, "Post Accident Sampling System Requirements: *A Technical Basis,"* and the associated NRC Safety Evaluation dated June 14, 2000, allows other core damage assessment capabilities in lieu of the Post Accident Sampling System.

Condition D applies when two hydrogen monitor channels are inoperable. Required Action D.1 requires restoring one hydrogen monitor channel to OPERABLE status within 72 hours. The 72 hour Completion Time is reasonable based on [the backup capability of the Post Accident Sampling System to monitor the hydrogen concentration for evaluation of core damage or other core damage assessment capabilities available and] to provide information for operator decisions. Also, it is unlikely that a LOCA (which would cause core damage) would occur during this time.

~~E.1~~

Condition E applies when the Required Action and associated Completion Time of Condition C or D are ~~not~~ met. Required Action ~~E.1~~ requires entering the appropriate Condition referenced ~~in~~ Table 3.3.3-1 for the channel immediately. The applicable Condition referenced ~~in the~~ Table is Function dependent. Each time an inoperable channel ~~has~~ not met any Required Action of Condition C or D, and the associated Completion Time has expired, Condition E is entered for that channel and provides for transfer to the appropriate subsequent Condition.

1

including the requirements of Specification 5.6.5

B

E

~~F~~.1 and ~~F~~.2

If the Required Action and associated Completion Time of Conditions ~~C~~ or D are not met ~~and Table 3.3.3-1 directs entry into Condition F~~, the unit must be brought to a MODE where the requirements of this LCO do not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and MODE 4 within 12 hours.

BASES

ACTIONS (continued)

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

1

5 TSTF-369

~~G.1~~

~~At this unit, alternate means of monitoring Reactor Vessel Water Level and Containment Area Radiation have been developed and tested. These alternate means may be temporarily installed if the normal PAM channel cannot be restored to OPERABLE status within the allotted time. If these alternate means are used, the Required Action is not to shut down the unit but rather to follow the directions of Specification 5.6.7, in the Administrative Controls section of the TS. The report provided to the NRC should discuss the alternate means used, describe the degree to which the alternate means are equivalent to the installed PAM channels, justify the areas in which they are not equivalent, and provide a schedule for restoring the normal PAM channels.~~

3

SURVEILLANCE REQUIREMENTS

A Note has been added to the SR Table to clarify that SR 3.3.3.1 and SR 3.3.3.2 apply to each PAM instrumentation Function in Table 3.3.3-1 except as noted in SR 3.3.3.2.

SR 3.3.3.1

Performance of the CHANNEL CHECK once every 31 days ensures that a gross instrumentation failure has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION. The high radiation instrumentation should be compared to similar unit instruments located throughout the unit.

In addition, it is not necessary to place a system or component in service that is not normally in service (e.g., initiate AFW flow to the SGs) in order to perform the required CHANNEL CHECK. In cases where the required instrumentation may be energized but only a single channel is available (e.g., HHSI Flow) or where there may be no flow (e.g., AFW Flow), the CHANNEL CHECK may be accomplished by comparing the indicated value to the known plant condition (e.g., zero flow). In the case of CIVs, the CHANNEL CHECK may be accomplished by comparing the indicated valve position to the known or expected valve position based on current plant conditions.

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including isolation, indication, and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit. If the channels are within the criteria, it is an indication that the channels are OPERABLE.

BASES

SURVEILLANCE REQUIREMENTS (continued)

As specified in the SR, a CHANNEL CHECK is only required for those channels that are normally energized.

The Frequency of 31 days is based on operating experience that demonstrates that channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

1

SR 3.3.3.2

A CHANNEL CALIBRATION is performed every [18] months, or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to measured parameter with the necessary range and accuracy. This SR is modified by a Note that excludes neutron detectors. The calibration method for neutron detectors is specified in the Bases of LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation." Whenever a sensing element is replaced, the next required CHANNEL CALIBRATION of the Core Exit thermocouple sensors is accomplished by an inplace cross calibration that compares the other sensing elements with the recently installed sensing element. The Frequency is based on operating experience and consistency with the typical industry refueling cycle.

one

In addition, this SR is modified by Note 2 that states the CHANNEL CALIBRATION surveillance is not applicable to the Penetration Flow Path Containment Isolation Valve Position Indication Function. The required valve position indication channels are verified by a Trip Actuating Operational Test (TADOT) in lieu of a CHANNEL CALIBRATION.

INSERT 7

REFERENCES

~~[1. Unit specific document (e.g., FSAR, NRC Regulatory Guide 1.97 SER letter).]~~

1 ~~2.~~ Regulatory Guide 1.97, ~~[date]~~. Rev. 2, December, 1980

2 ~~3.~~ NUREG-0737, Supplement 1, "TMI Action Items."

3. WCAP-15981, Rev. 0, "Post Accident Monitoring Instrumentation Redefinition for Westinghouse NSSS Plants"

4. License Amendment numbers [*later*] (Unit 1) and [*later*] (Unit 2) and the associated NRC Safety Evaluation Report dated [*later*].

5. WCAP-14696-A, Rev. 1, Westinghouse Owners Group Core Damage Assessment Guidance.

1

# ITS 3.3.3 BASES INSERTS

## INSERT 1 - BVPS BASES BACKGROUND

The primary purpose of the PAM instrumentation is to display unit variables that provide information required by the control room operators during accident situations. This information provides the necessary support for the control room operator to take the manual actions for which no automatic control is provided and that are required for safety systems to accomplish their safety functions for Design Basis Accidents (DBAs) or that the Probabilistic Risk Assessment (PRA) has shown to be significant to the public health and safety.

The OPERABILITY of the accident monitoring instrumentation ensures that there is sufficient information available on selected unit parameters to monitor and to assess the unit status and behavior following an accident.

The availability of accident monitoring instrumentation is important so that responses to corrective actions can be observed and the need for, and magnitude of, further actions can be determined. These essential instruments are identified by addressing the recommendations of Regulatory Guide 1.97 (Ref. 1) as required by Supplement 1 to NUREG-0737 (Ref. 2) and by evaluating the instrumentation consistent with the methodology contained in WCAP-15981 (Ref. 3). This methodology considers the use of the accident monitoring instrumentation in the design basis accident analysis, PRA, Emergency Operating Procedures (EOPs), Severe Accident Management Guidance (SAMG) procedures, and Emergency Plan (E-Plan).

The control room monitoring instrumentation Functions required to be OPERABLE by this LCO have been evaluated and selected in accordance with the screening criteria contained in WCAP-15981. The screening criteria were used to identify the PAM instrumentation important to safety (i.e., monitor plant parameters that are the basis for important operator actions to bring the unit to a safe stable state in the event of an accident). The details and results of this evaluation are contained in the documentation associated with License Amendment numbers [*later*] (Unit 1) and [*later*] (Unit 2) including the NRC Safety Evaluation Report (Ref. 4).

The selected instrument Functions satisfy Criterion 3 and/or 4 of 10 CFR 50.36(c)(2)(ii), and include Regulatory Guide 1.97 monitoring instrumentation for parameters identified as important to safety in accordance with WCAP-15981. The selected PAM instrument Functions are listed in Table 3.3.3-1 and are discussed in more detail in the LCO section of the Bases.

## INSERT 2 - BVPS BASES APPLICABLE SAFETY ANALYSES

The PAM specification ensures the operability of instrumentation to monitor plant parameters necessary for safety significant operator actions so that the control room operating staff can:

- Perform the diagnosis specified in the EOPs (these variables are restricted to preplanned actions for the primary success path of DBAs), e.g., loss of coolant accident (LOCA),
- Take the specified, pre-planned, manually controlled actions, for which no automatic control is provided, and that are required for safety systems to accomplish their safety function,
- Implement procedures or guidance that has been shown to have an important role in preventing core damage or early fission product releases,
- Determine the likelihood of a gross breach of the barriers that prevent radioactivity release,

- Determine if a gross breach of a barrier has occurred, and
- Initiate action necessary to protect the public and to estimate the magnitude of any impending threat.

The PAM instrumentation selected in accordance with WCAP-15981 is used to monitor plant parameters necessary for safety significant operator actions and satisfies Criterion 3 and/or 4 of 10 CFR 50.36(c)(2)(ii).

**INSERT 3 - BVPS BASES LCO**

The PAM instrumentation LCO provides OPERABILITY requirements for the control room monitoring instrumentation Functions important to safety (i.e., monitor plant parameters that are the basis for important operator actions to bring the plant to a safe stable state in the event of an accident).

The OPERABILITY of the PAM instrumentation ensures there is sufficient information available on selected unit parameters to monitor and assess unit status following an accident. This capability is consistent with the guidance of Reference 3.

LCO 3.3.3 requires two OPERABLE channels for most Functions. Two OPERABLE channels ensure no single failure prevents operators from getting the information necessary for them to determine the safety status of the unit, and to bring the unit to and maintain it in a safe condition following an accident. Therefore, where plant design and channel availability permit, the two channels required OPERABLE by the LCO should be supplied from different trains of electrical power.

Furthermore, OPERABILITY of two channels allows a CHANNEL CHECK during the post accident phase to confirm the validity of displayed information.

For some PAM Functions, Table 3.3.3-1 specifies one or three required channels. The following are exceptions to the two-channel requirement:

Three channels of steam generator (SG) wide range level instrumentation are required to be OPERABLE. Each SG has one installed wide range channel that assures the ability to monitor SG level during operating conditions when the level may not be in the normal range. In many accident analyses, two SGs are assumed to be available to provide the necessary heat removal capacity. The requirement for three OPERABLE channels of wide range level indication (one per SG) helps to assure adequate wide range SG level indication remains available (assuming one indication channel fails or a SG is faulted) to monitor SG level and support maintaining the necessary heat removal capacity.

One channel of high head safety injection (HHSI) total flow is required to be OPERABLE. The normal SI injection flow path (automatically initiated on an SI signal) has a single installed Regulatory Guide 1.97 flow instrument that indicates total SI flow in the control room. This indicator is used to confirm automatic SI flow initiation. The single HHSI total flow indication is adequate considering the alternate control room indications available to confirm the operation of the SI system. An alternate method of verifying SI initiation can be provided by the High Head SI pump amperage indication, the High Head SI header pressure indication, and the SI automatic valve position indication.

# ITS 3.3.3 BASES INSERTS

For Unit 1 only, three channels of Auxiliary Feedwater (AFW) Flow indication (1 per SG) are required to be OPERABLE. Each SG has a single AFW flow indicator in the control room. AFW flow is used by the operator to verify that the AFW System is delivering the correct flow to each SG. The single Unit 1 AFW flow indicator per SG is acceptable, considering the alternate indications provided by the SG Water Level Wide Range indication or the SG Water Level Narrow Range indication to ensure adequate SG inventory. In addition, alternate methods of determining the need for operator action in the event that the auxiliary feedwater flow rate indication is not available can be provided by the AFW pump amperage instrumentation (motor-driven pumps), flow control valve position indication (SG supply), and automatic turbine steam supply valve position indication.

Another exception to the two channel requirement is Penetration Flow Path Containment Isolation Valve (CIV) Position. In this case, the important information is the status of the containment penetrations. The LCO requires one position indicator for each active CIV (i.e., associated penetration not isolated and designed with control room indication per the Table 3.3.3-1 footnotes modifying the required CIV position indication). The active CIVs addressed by this LCO only include valves designed to close on a Phase A or Phase B containment isolation signal. Valves that open on a Phase A or Phase B containment isolation signal are not required to have their position verified to confirm adequate containment isolation. Thus, the requirements of this LCO are sufficient to redundantly verify the isolation status of each isolable penetration (required to be isolated during accident conditions) either via indicated status of the active valve, or the reliability of containment isolation valves without control room indication (i.e. automatic check valves and relief valves that are not dependent on a external power source or closure signal), or prior knowledge of a passive valve, or via closed system boundary status. If a normally active CIV is known to be closed and deactivated or open under administrative controls in accordance with the provisions of the CIV technical specification, position indication is not needed to determine status. Therefore, the position indication for valves in this state is not required to be OPERABLE.

Table 3.3.3-1 provides a list of the control room indications identified as important to safety in accordance with the methodology of WCAP-15981.

The following instrument monitoring Functions are required to be OPERABLE by this LCO:

1. Pressurizer Water Level

   Pressurizer Level indication is used for the SI termination criteria to prevent pressurizer overfill. The termination of SI to prevent pressurizer overfill is an operator action assumed in the design basis steamline break analysis for which no automatic actuation is provided. The PRA also indicates that SI termination in the event of a steam generator tube rupture is required for long term core cooling.

   Pressurizer Level indication satisfies both Criteria 3 and 4 of 10 CFR 50.36(c)(2)(ii).

2. Auxiliary Feedwater (AFW) Flow Rate

   AFW Flow indication is used by the operator to confirm that the AFW System is in operation and delivering the correct flow to each SG. However, the primary indication used by the operator to ensure an adequate inventory is SG level. The PRA shows that AFW Flow indication can be important to safety by providing information necessary for operator action to initiate alternate feedwater sources in the event of a failure of the AFW system.

   For Unit 2 only, two channels of AFW Flow indication are required OPERABLE for each steam generator. Due to the redundant indications required OPERABLE, the Unit 2 AFW Flow indications to each steam generator are treated as separate PAM Functions. Therefore, consistent with ACTIONS Note 2, separate ACTION Condition entry is allowed for Unit 2 Functions 2.b) 1, 2, and 3 on Table 3.3.3-1.

AFW Flow indication satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

Alternate methods of determining the need for operator action in the event that the AFW flow rate indication is not available can be provided by the AFW pump amperage instrumentation (motor-driven pumps), flow control valve position indication (SG supply), and automatic turbine steam supply valve position indication.

3. Power Range Neutron Flux

The Power Range Neutron Flux indication is used to confirm a reactor shutdown following a design basis accident. The PRA shows that operator actions to manually shutdown the reactor in the event of a failure of the automatic actions, as determined from the Power Range Neutron Flux indication, can be important to safety.

The Power Range Neutron Flux indication satisfies criterion 4 of 10 CFR 50.36(c)(2)(ii).

LCO 3.3.3 is modified by a Note that provides an exception to the PAM OPERABILITY requirement for Power Range Neutron Flux indication in MODE 3. The basis for the PAM requirement for Power Range Neutron Flux indication is that it is used to confirm an automatic reactor shutdown from power operation. Therefore, the PAM Power Range Neutron Flux indication requirements are only applicable in MODES 1 and 2 when the power range instrumentation functions to provide the necessary PAM indication.

If the power range neutron flux indications are not available, an alternate method of verifying a reactor trip is a combination of either the intermediate range or source range neutron flux indications and either the rod bottom lights or rod position indicators.

4. High Head Safety Injection (SI) Flow

High Head SI Flow indication is used to confirm automatic safety injection initiation following a design basis accident. Therefore, the required flow indicator for this PAM Function is the total flow indicator installed in the automatic High Head SI flow path. The results of the PRA shows that this is a risk significant operator action. Failure to manually initiate SI flow when the automatic initiation fails can lead to a significant increase in core damage frequency. The operator action is based on the ECCS flow indication in the control room. The PRA shows that only high head safety injection is important for all accident sequences except the unlikely double-ended guillotine rupture of the largest reactor coolant pipe. Therefore, only the High Head SI Flow indication is required.

High Head SI Flow indication satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

If the total High Head SI Flow indication is not available, an alternate method of verifying SI initiation can be provided by the High Head SI pump amperage indication, the High Head SI header pressure indication, and the SI automatic valve position indication.

5. Steam Generator (SG) Pressure

SG Pressure provides a target indication for RCS depressurization for the steam generator tube rupture accident to terminate the RCS inventory loss. In the event of a steam generator tube rupture accident, the EOPs instruct the operators to depressurize the RCS to a pressure below the secondary side pressure in the ruptured steam generator. RCS depressurization to a pressure less than the steam generator pressure terminates the RCS inventory loss and terminates the steam generator inventory gain, preventing overfill of the steam generator. The termination of the break flow is an operator action assumed in the design basis steam generator tube rupture analysis for which no automatic action is provided. The PRA shows that failure to depressurize the RCS to a pressure less than the secondary side pressure in the ruptured steam generator is a risk significant operator action.

Two channels of pressure indication are required OPERABLE for each steam generator. Due to the redundant indications required OPERABLE, the indications for each steam generator are treated as separate PAM Functions. Therefore, consistent with General Note 2, separate ACTION statement entry is allowed for Functions 5.a, 5.b, and 5.c on Table 3.3.3-1.

SG Pressure indication satisfies both Criteria 3 and 4 of 10 CFR 50.36(c)(2)(ii).

6. Refueling Water Storage Tank (RWST) Level (Wide Range)

RWST Level provides an indication of the water inventory remaining for use by containment spray and safety injection for core cooling and containment cooling. No operator actions in the design basis accident analysis are based on the RWST Level indication. The switchover from the RWST to the containment sump is performed automatically.

The PRA shows that in the event of an accident in which the RCS inventory losses are outside of containment (e.g., steam generator tube rupture and interfacing system LOCA), the remaining RWST level is an important indication for choosing the appropriate operator actions to maintain core cooling in the EOPs. The PRA shows the importance of diagnosing the need for implementing RWST refill to maintain a sufficient inventory for long term core cooling following these events.

RWST Level indication satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

7. Reactor Coolant System (RCS) Pressure (Wide Range)

RCS Wide Range Pressure indication provides the information necessary for RCS depressurization for the steam generator tube rupture accident to terminate the RCS inventory loss. In the event of a steam generator tube rupture accident, the EOPs instruct the operators to depressurize the RCS to a pressure below the secondary side pressure in the ruptured steam generator. RCS depressurization to a pressure less than the steam generator pressure terminates the RCS inventory loss and terminates the steam generator inventory gain, preventing overfill of the steam generator. The termination of the break flow is an operator action assumed in the design basis steam generator tube rupture analysis for which no automatic action is provided. RCS pressure is also used for operator action to terminate SI in the event of a steamline break to prevent pressurizer overfill for which no automatic actuation is provided. Additionally, the PRA indicates that RCS pressure is a variable important to safety for RCS cooldown and depressurization following a steam generator tube rupture.

RCS Pressure indication satisfies both Criteria 3 and 4 of 10 CFR 50.36(c)(2)(ii).

The LCO requirement for two channels can be met by using any combination of the RCS Pressure Wide Range transmitter(s) or the Reactor Vessel Level Indicating System RCS Pressure transmitter(s).

8. SG Water Level (Wide Range)

SG Water Level (Wide Range) indication is provided to monitor operation of decay heat removal via the SGs. SG Water Level (Wide Range) indication is used to:

- identify the faulted SG following a steam generator tube rupture,
- verify that the intact SGs are an adequate heat sink for the reactor,
- determine the nature of the accident in progress (e.g., verify a steam generator tube rupture),
- verify unit conditions for the termination of SI during secondary side HELBs outside containment, and
- verify SG tubes are covered before terminating AFW to the faulted SG to assure iodine scrubbing and design basis iodine partitioning in the event of a steam generator tube rupture.

Controlling SG level to maintain a heat sink and the diagnosis of a steam generator tube rupture based on SG level are operator actions assumed in the design basis accident analysis for which no automatic actuation is provided. In addition, the PRA shows that SG Wide Range Level indication can be important to safety by providing information for the initiation of operator actions to establish bleed and feed for a loss of heat sink event.

SG Water Level (Wide Range) indication satisfies both Criteria 3 and 4 of 10 CFR 50.36(c)(2)(ii).

If a channel of wide range SG level instrumentation is not available, an alternate method of monitoring the SG level is a combination of one channel of SG narrow range instrumentation and Auxiliary Feedwater Flow Rate indication to that SG.

9. Containment Area Radiation (High Range)

Containment Area Radiation High Range provides an indication of a loss of one or more fission product barriers. The Emergency Action Levels in the E-Plan utilizes the Containment Area Radiation High Range monitor as an indication of the potential loss of one or more fission product barriers in the assessment of the declaration of a General Emergency level and the potential need for offsite radiological protection actions. The post accident Core Damage Assessment also uses the Containment Area Radiation High Range monitor as an input to the determination of core damage. The required high range monitors are designated RM-1RM-219 A & B (for Unit 1) and 2RMR-RQ206 & 207 (for Unit 2).

The Containment Area Radiation High Range indication satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

Radiation monitor RM-1RM-201 (for Unit 1) and 2RMR-RQ202B (for Unit 2) or a portable radiation monitor (with appropriate multiplier if necessary) can be used as an alternate method of indication for Containment Area Radiation High Range.

10. Containment Pressure (Wide Range)

Containment Pressure (Wide Range) indication is provided for assessing containment cooling and containment integrity. No operator actions in the design basis accident analysis are based on the Containment Pressure indication. Containment Pressure is an indicator of the potential loss of a fission product boundary in the Emergency Action Levels in the E-Plan. Containment Pressure is a key indicator in the declaration of a General Emergency level and the potential need for offsite radiological protection actions. Containment pressure may also be used in post accident conditions to determine when to vent the containment to prevent overpressurization.

Containment Pressure (Wide Range) indication satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

11. Core Exit Temperature

Core Exit Temperature indication is provided for verification and long term surveillance of core cooling. The Core Exit Temperature indication provides information for the operators to initiate RCS depressurization following a steam generator tube rupture. The PRA shows that Core Exit Thermocouple indication is important to safety by providing information necessary to maintain subcooling for RCS cooldown and depressurization following steam generator tube rupture and other small LOCA events. It is also used as an indication for the transfer from the EOPs to the Severe Accident Management Guidance, where a greater focus is maintained on preserving the remaining fission product barriers.

Table 3.3.3-1 requires two OPERABLE channels of Core Exit Temperature. Footnote (c) to Table 3.3.3-1 requires a Core Exit Temperature channel to consist of two core exit thermocouples. Two sets of two thermocouples ensure that a single failure will not affect the ability to determine whether an inadequate core cooling condition exists.

Two OPERABLE channels of Core Exit Temperature from any core location except the three outermost rows of fuel assemblies on each side of the core are required to provide the most timely indication of the coolant temperature rise across the core exit. The three outermost rows of fuel assemblies are identified by counting straight in towards the center of the core from the outermost row consisting of three assemblies on each side of the core. The acceptable central core exit thermocouples can also be identified as being within the core area consisting of up to four fuel assemblies from the center fuel assembly (not counting the center assembly).

Severe accident analyses documented in WCAP-14696-A (Ref. 5) demonstrate that the coolant temperature increase at a central core location (i.e., not in the three outermost rows of fuel assemblies) provides the most rapid indication of inadequate core cooling. Therefore, in order to get the most rapid indication of coolant temperature rise in the core, the two thermocouples in each channel used to meet the LCO requirement must not be located in the three outermost rows of fuel assemblies.

Core Exit Temperature indication satisfies both Criteria 3 and 4 of 10 CFR 50.36(c)(2)(ii).

12. Penetration Flow Path Containment Isolation Valve (CIV) Position

Penetration Flow Path CIV Position indication is provided for verification of Containment Phase A and Phase B isolation. The E-Plan identifies that an elevated emergency action level should be declared following an accident in the event of a failure of automatic containment isolation.

This requirement only applies to containment isolation valves which receive a Phase A and Phase B containment isolation closure signal. This requirement is not applicable to valves that open on receipt of a Containment Phase A or B signal. When used to verify Phase A and Phase B isolation, the important information is the isolation status of the containment penetrations. The LCO requires one channel of valve position indication in the control room to be OPERABLE for each active CIV in a containment penetration flow path, i.e., two total channels of CIV position indication for a penetration flow path with two active valves that have control room position indication. For containment penetrations with only one active CIV having control room indication, footnote (b) requires a single channel of valve position indication to be OPERABLE. This is sufficient to redundantly verify the isolation status of each isolable penetration either via indicated status of the active valve with control room indication and the reliability of containment isolation valves without control room indication (i.e. automatic check valves and relief valves that are not dependent on a external power source or closure signal), or prior knowledge of a passive valve, or via closed system boundary status. If a normally active CIV is known to be closed and deactivated or open under administrative controls in accordance with the provisions of the CIV technical specification, position indication is not needed to determine status. Therefore, the position indication for valves in this state is not required to be OPERABLE. Footnote (a) to the Required Channels states that the Function is not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. Each penetration is treated separately and each penetration flow path is considered a separate function. Therefore, separate Condition entry is allowed for each inoperable penetration flow path.

CIV Position indication satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

## INSERT 4 - BVPS BASES ACTION A.1

Condition A applies when one or more Functions have one required channel that is inoperable. Required Action A.1 requires restoring the inoperable channel to OPERABLE status within 30 days. The 30 day completion time is based on operating experience and takes into account the remaining OPERABLE channel (or in the case of a Function that has only one required channel, other control room indications available to accomplish the Function), the passive nature of the instrument (no critical automatic action is assumed to occur from these instruments for a PAM function), and the low probability of an event requiring PAM instrumentation during this interval.

If the inoperable channel is anticipated to remain inoperable for an extended time, it is expected that action will be initiated as soon as possible to confirm the availability, functionality, and procedure impact of any applicable pre-planned alternate instrumentation required to meet the Required Action of Condition B. This will assure the capability of performing the PAM Function is maintained and that preparations are initiated as soon as possible to meet the requirements of Action Condition B, if applicable.

### INSERT 5 - BVPS BASES ACTION C.1

Condition C applies when one or more Functions have two or more inoperable required channels (i.e., two or more required channels inoperable in the same Function). Condition C specifies that the required channel(s) (i.e., the number of channels necessary to allow Condition C to be exited) must be restored to OPERABLE status in 7 days. This Action requires the restoration of a single channel for Functions with 2 required channels and the restoration of 1 or 2 channels for Functions with 3 required channels (depending on the number of inoperable channels). The requirements of Condition C are considered met when action is complete that results in the affected Function having only one inoperable channel such that only Condition A remains applicable for that Function. The completion time of 7 days is based on the relatively low probability of an event requiring PAM instrument operation.

### INSERT 6 - BVPS BASES ACTION D.1

Condition D applies when the Required Action and associated Completion Time for Condition C are not met. Required Action D.1 specifies initiation of actions in accordance with Specification 5.6.5 immediately, except that the required written report must be submitted to the NRC within the following 7 days instead of the 14 days allowed by Specification 5.6.5. The required report discusses the results of the root cause evaluation of the inoperability and identifies proposed restorative actions. This Action includes verification that any proposed alternate indication is functionally capable of performing the required PAM Function and verification that any revised procedures necessary to implement the alternate indication are in place. This action is appropriate in lieu of a shutdown requirement since alternative actions are identified that provide a similar functional capability, and given the likelihood of unit conditions that would require information provided by this instrumentation.

### INSERT 7 - BVPS BASES SR 3.3.3.3

SR 3.3.3.3

This surveillance requires the performance of a TADOT. The TADOT is only required for the Penetration Flow Path Containment Isolation Valve Position Function on Table 3.3.3-1. This SR is required to be performed at least once every 18 months, or approximately at every refueling. The TADOT is adequate to verify the OPERABILITY of the required containment isolation valve position indication channels.

A Note modifies the surveillance requirements to specify that SR 3.3.3.3 is only applicable to the Penetration Flow Path Containment Isolation Valve Position Function. Due to the design of the instrument circuits involved, the TADOT, rather than the CHANNEL CALIBRATION, provides the more appropriate defined test to verify the OPERABILITY of these indication channels.

The Frequency of 18-months is consistent with the typical industry refueling cycle.

## B 3.3 INSTRUMENTATION

## B 3.3.4 Remote Shutdown System

BASES

3 indications 1

BACKGROUND 2 The Remote Shutdown System provides the control room operator with sufficient ~~instrumentation~~ and controls to ~~place and~~ maintain the unit in a safe shutdown condition from a location other than the control room. This capability is necessary to protect against the possibility that the control room becomes inaccessible. A safe shutdown condition is defined as MODE 3. With the unit in MODE 3, ~~the~~ Auxiliary Feedwater (AFW) System and the steam generator (SG) ~~safety valves or the SG~~ atmospheric dump valves (ADVs) can be used to remove core decay heat and meet all safety requirements. *The long term supply of water for the AFW System and the* ability to borate the Reactor Coolant System (RCS) from outside the control room allows extended operation in MODE 3.

control utilizing the Remote Shutdown System. The Remote Shutdown System indications and controls necessary to maintain the unit in a safe shutdown condition (Mode 3) are specified in Table B 3.3.4-1 and are physically located on the Emergency Shutdown Panels (PNL-SHUTDN for Unit 1 and PNL-2SHUTDN for Unit 2).

3

If the control room becomes inaccessible, the operators can establish ~~control at the remote shutdown panel, and place and maintain the unit in MODE 3. Not all controls and necessary transfer switches are located at the remote shutdown panel. Some controls and transfer switches will have to be operated locally at the switchgear, motor control panels, or other local stations.~~ The unit automatically reaches MODE 3 following a unit ~~shutdown~~ trip and can be maintained safely in MODE 3 for an extended period of time.

Plant procedures assure the reactor is manually tripped and safely shutdown prior to transferring control to the Emergency Shutdown Panel.

3

The OPERABILITY of the remote shutdown control and ~~instrumentation~~ indication functions ensures there is sufficient information available on selected unit parameters to ~~place and~~ maintain the unit in MODE 3 should the control room become inaccessible.

3

1

APPLICABLE SAFETY ANALYSES

The Remote Shutdown System is required to provide equipment at appropriate locations outside the control room with a capability to ~~promptly shut down and~~ maintain the unit in a safe condition in MODE 3.

There are no specific design basis accident safety analysis assumptions (i.e., single active failures) that would require redundant Remote Shutdown System indications or controls be maintained OPERABLE by the Technical Specifications. Therefore, Table B 3.3.4-1 only specifies that a single channel of each indication and control function be operable in order to meet the requirements of the LCO.

The criteria governing the design and specific system requirements of the Remote Shutdown System are located in 10 CFR 50, Appendix A, GDC 19 (Ref. 1).

The Remote Shutdown System satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

7

the Emergency Shutdown Panels (PNL-SHUTDN for Unit 1 and PNL-2SHUTDN for Unit 2)

BASES

for

indications

LCO

The Remote Shutdown System LCO provides the OPERABILITY requirements of the ~~instrumentation~~ and controls necessary to ~~place and~~ maintain the unit in MODE 3 from a ~~location other than the control room~~. The ~~instrumentation~~ and controls required are listed in Table B 3.3.4-1.

Each control channel specified in Table B 3.3.4-1 consists of both the control switch and associated transfer switch if applicable.

The controls, ~~instrumentation~~, and transfer switches are required for:

- Core reactivity control ~~(initial and long term)~~,
- RCS pressure control,
- Decay heat removal via the AFW System and the ~~SG safety valves or~~ SG ADVs,
- RCS inventory control via charging flow, and
- Safety support systems for the above Functions, including ~~service water, component cooling water~~, and onsite power, ~~including the diesel generators~~.

Component Cooling Water, Unit 1 River Water, and Unit 2 Service Water.

indication

A Function of a Remote Shutdown System is OPERABLE if all ~~instrument~~ and control channels needed to support the Remote Shutdown System Function are OPERABLE. ~~In some cases, Table B 3.3.4-1 may indicate that the required information or control capability is available from several alternate sources. In these cases, the Function is OPERABLE as long as one channel of any of the alternate information or control sources is OPERABLE.~~

However, not all indication and control circuits associated with the systems identified in Table B 3.3.4-1 are required OPERABLE in order to support the required Remote Shutdown System Function. Table B 3.3.4-1 only specifies 1 required channel for each indication and control instrument associated with each Remote Shutdown System Function. For example, the capability to remotely operate a single AFW pump and control its flow and the control of one associated SG ADV provide the necessary control channels to accomplish the decay heat removal Function specified in Table B 3.3.4-1. All the AFW pump and flow controls do not have to be OPERABLE to accomplish the decay heat removal Function required OPERABLE by the LCO. Similarly, the control for a single letdown orifice isolation valve is sufficient to meet the requirement of the RCS Inventory Function for 1 channel of letdown flow control.

indication

The remote shutdown ~~instrument~~ and control ~~circuits~~ covered by this LCO do not need to be energized to be considered OPERABLE. This LCO is intended to ensure the ~~instruments~~ and control ~~circuits~~ will be OPERABLE if unit conditions require that the Remote Shutdown System be placed in operation.

channels

APPLICABILITY

The Remote Shutdown System ~~LCO~~ is applicable in MODES 1, 2, and 3. This is required so that the unit can be ~~placed and~~ maintained in MODE 3 for an extended period of time from a location other than the control room.

This LCO is not applicable in MODE 4, 5, or 6. In these MODES, the facility is already subcritical and in a condition of reduced RCS energy. Under these conditions, considerable time is available to restore necessary instrument control functions if control room instruments or controls become unavailable.

BASES

TSTF-359

ACTIONS

A Remote Shutdown System Function is inoperable when 1 or more required channel(s) of indication or control are inoperable. The required channels of indication and control for each Remote Shutdown System Function are specified on Table B 3.3.4-1.

Note 1 is included which excludes the MODE change restriction of LCO 3.0.4. This exception allows entry into an applicable MODE while relying on the ACTIONS even though the ACTIONS may eventually require a unit shutdown. This exception is acceptable due to the low probability of an event requiring the Remote Shutdown System and because the equipment can generally be repaired during operation without significant risk of spurious trip.

A Remote Shutdown System division is inoperable when each function is not accomplished by at least one designated Remote Shutdown System channel that satisfies the OPERABILITY criteria for the channel's Function. These criteria are outlined in the LCO section of the Bases.

3

TSTF-359 A

Note 2 has been added to the ACTIONS to clarify the application of Completion Time rules. Separate Condition entry is allowed for each Function. The Completion Time(s) of the inoperable channel(s)/~~train(s)~~ of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.

A.1

Condition A addresses the situation where one or more required Functions of the Remote Shutdown System are inoperable. This includes the control and transfer switches for any required Function.

The Required Action is to restore the required Function to OPERABLE status within 30 days. The Completion Time is based on operating experience and the low probability of an event that would require evacuation of the control room.

B.1 and B.2

If the Required Action and associated Completion Time of Condition A is not met, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.4.1

indication

3

Performance of the CHANNEL CHECK once every 31 days ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

indication

3

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including indication and readability. If the channels are within the criteria, it is an indication that the channels are OPERABLE. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

As specified in the Surveillance, a CHANNEL CHECK is only required for those channels which are normally energized.

In addition, it is not necessary to place a system or component in service that is not normally in service (e.g., initiate AFW flow to the SGs) in order to perform the required CHANNEL CHECK of a Remote Shutdown System indication channel. In cases where the required instrumentation may be energized but only a single channel is available or where there may be no flow (e.g., AFW Flow), the CHANNEL CHECK may be accomplished by comparing the indicated value to the known plant condition (e.g., zero flow).

6

The Frequency of 31 days is based upon operating experience which demonstrates that channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

SR 3.3.4.~~2~~ 3

1

SR 3.3.4.~~2~~ verifies each required Remote Shutdown System control circuit and transfer switch performs the intended function. This verification is performed from the remote shutdown panel and locally, as appropriate. Operation of the equipment from the remote shutdown panel is not necessary. The Surveillance can be satisfied by performance of a continuity check. This will ensure that if the control room becomes inaccessible, the unit can be ~~placed and~~ maintained in MODE 3 from the ~~remote shutdown panel and the local control stations~~. The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. (However, this Surveillance is not required to be performed only during a unit outage.)

3

Emergency Shutdown Panels (PNL-SHUTDN for Unit 1 and PNL-2SHUTDN for Unit 2)

36

4

BASES

SURVEILLANCE REQUIREMENTS (continued)

4

36

Operating experience demonstrates that remote shutdown control channels usually pass the Surveillance test when performed at the ~~[18]~~ month Frequency.

2

an indication

3

SR 3.3.4.~~3~~

This SR is modified by a Note that excludes neutron detectors. The calibration method for neutron detectors is specified in the Bases of LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation."

CHANNEL CALIBRATION is a complete check of ~~the~~ instrument loop and the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy.

Whenever a sensing element is replaced, the next required CHANNEL CALIBRATION of the resistance temperature detectors (RTD) sensors is accomplished by an inplace cross calibration that compares the other sensing elements with the recently installed sensing element.

The Frequency of [18] months is based upon operating experience and consistency with the typical industry refueling cycle.

4

~~[SR 3.3.4.4~~

~~SR 3.3.4.4 is the performance of a TADOT every 18 months. This test should verify the OPERABILITY of the reactor trip breakers (RTBs) open and closed indication on the remote shutdown panel, by actuating the RTBs. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The Frequency is based upon operating experience and consistency with the typical industry refueling outage. ]~~

REFERENCES 1. 10 CFR 50, Appendix A, GDC 19.

Replace with BVPS specific Table B 3.3.4-1 (next page)

8



Table B 3.3.4-1 (page 1 of 1)
Remote Shutdown System Instrumentation and Controls

| FUNCTION/INSTRUMENT OR CONTROL PARAMETER | REQUIRED NUMBER OF FUNCTIONS |
|---|---|
| 1. Reactivity Control | |
| a. Source Range Neutron Flux | [1] |
| b. Reactor Trip Breaker Position | [1 per trip breaker] |
| c. Manual Reactor Trip | [2] |
| 2. Reactor Coolant System (RCS) Pressure Control | |
| a. Pressurizer Pressure or RCS Wide Range Pressure | [1] |
| b. Pressurizer Power Operated Relief Valve (PORV) Control and Block Valve Control | [1, controls must be for PORV & block valves on same line] |
| 3. Decay Heat Removal via Steam Generators (SGs) | |
| a. RCS Hot Leg Temperature | [1 per loop] |
| b. RCS Cold Leg Temperature | [1 per loop] |
| c. AFW Controls Condensate Storage Tank Level | [1] |
| d. SG Pressure | [1 per SG] |
| e. SG Level or AFW Flow | [1 per SG] |
| 4. RCS Inventory Control | |
| a. Pressurizer Level | [1] |
| b. Charging Pump (Control) | [1] |

- REVIEWER'S NOTE -

For channels that fulfill GDC 19 requirements, the number of OPERABLE channels required depends upon the unit licensing basis as described in the NRC unit specific Safety Evaluation Report (SER). Generally, two divisions are required OPERABLE. However, only one channel per a given Function is required if the unit has justified such a design, and NRC's SER accepted the justification.

- REVIEWER'S NOTE -

This Table is for illustration purposes only. It does not attempt to encompass every Function used at every unit, but does contain the types of Functions commonly found.

# Insert BVPS Specific Table B 3.3.4-1

Table B 3.3.4-1 (page 1 of 1)
*Remote Shutdown System Indications and Controls*

Emergency Shutdown Panels
PNL-SHUTDN (Unit 1) and PNL-2SHUTDN (Unit 2)

| REMOTE SHUTDOWN SYSTEM FUNCTION INDICATIONS AND CONTROLS | REQUIRED NUMBER OF CHANNELS |
|---|---|
| 1. Reactivity Control Function | |
| a. *Source Range Neutron Flux (indication)* | 1 |
| b. Boric Acid Transfer Pump (control) | 1 |
| 2. Reactor Coolant System (RCS) Pressure Control Function | |
| a. Pressurizer Pressure (indication) | 1 |
| or | |
| [redacted] | |
| b. Pressurizer heater (control) | 1 |
| 3. Decay Heat Removal via Steam Generators (SGs) Function | |
| a. RCS Hot Leg Temperature (indication) | 1 |
| b. RCS Cold Leg Temperature (indication) | 1 |
| c. SG Pressure (indication) | 1/SG |
| d. SG Level (indication) | 1/SG |
| e. AFW Flow (indication) | 1/SG |
| f. SG Atmospheric Dump Valve (control) | 1 |
| or | |
| [redacted] | |
| g. AFW pump (Control) | 1 |
| h. AFW Flow (Control) | 1 |
| 4. RCS Inventory Control Function | |
| a. Pressurizer Level (indication) | 1 |
| b. Charging Pump (Control) | 1 |
| c. Charging Flow (Control) | 1 |
| d. Letdown Flow (Control) | 1 |
| 5. Support Systems | |
| a. Component Cooling Water pump (control) | 1 |
| b. River Water pump (control) (Unit 1 only) | 1 |
| c. [redacted] | 1 |

B 3.3 INSTRUMENTATION

B 3.3.5 Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation

and Bus Separation

BASES 2 1

BACKGROUND

The LOP instrumentation ensures a reliable source of emergency power by providing the following Functions: 1) An automatic DG start on emergency bus undervoltage, and 2) Separation of the emergency buses on undervoltage and degraded voltage conditions.

The DGs provide a source of emergency power when offsite power is either unavailable or is insufficiently stable to allow safe unit operation. ~~Undervoltage protection will generate an LOP start if a loss of voltage or degraded voltage condition occurs in the switchyard. There are two LOP start signals, one for each 4.16 kV vital bus.~~

INSERT 1

~~Three undervoltage relays with inverse time characteristics are provided on each 4160 Class 1E instrument bus for detecting a sustained degraded voltage condition or a loss of bus voltage. The relays are combined in a two-out-of-three logic to generate an LOP signal if the voltage is below 75% for a short time or below 90% for a long time. The LOP start actuation is described in FSAR, Section 8.3 (Ref. 1).~~

nominal

The Allowable Value in conjunction with the trip setpoint and LCO establishes the threshold for ~~Engineered Safety Features Actuation System (ESFAS) action to prevent exceeding acceptable limits such that the consequences of Design Basis Accidents (DBAs) will be acceptable.~~ the LOP instrumentation capability to provide the required loss of voltage and degraded voltage protection that assures a reliable source of emergency power. The nominal trip setpoints are specified in the Licensing Requirements Manual (LRM). The Allowable Value is considered a limiting value such that a channel is OPERABLE if the setpoint is found ~~not~~ to ~~exceed the Allowable Value~~ satisfy the applicable Allowable Value requirements specified in Table 3.3.5-1 during the CHANNEL CALIBRATION. Note that although a channel is OPERABLE under these circumstances, the setpoint must be left adjusted to within the established calibration tolerance band of the setpoint in accordance with uncertainty assumptions stated in the referenced setpoint methodology, (as-left-criteria) and confirmed to be operating within the statistical allowances of the uncertainty terms assigned.

Allowable Values and LOP DG Start Instrumentation Setpoints

1 2

~~- REVIEWER'S NOTE -~~
~~Alternatively, a TS format incorporating an Allowable Value only may be proposed by a licensee. In this case the Nominal Trip Setpoint value is located in the TS Bases or in a licensee controlled document outside the TS. Changes to the trip setpoint value would be controlled by 10 CFR 50.59 or administratively as appropriate, and adjusted per the setpoint methodology and applicable surveillance requirements. At their option, the licensee may include the trip setpoint in the surveillance requirement as shown, or suggested by the licensee's setpoint methodology.~~

and Bus Separation

BASES

The allowances used to develop the nominal trip setpoints for the loss of voltage and degraded voltage relays are described in the unit specific setpoint methodology (Ref. 2).

nominal

2

BACKGROUND (continued)

~~The Trip Setpoints used in the relays are based on the analytical limits presented in FSAR, Chapter 15 (Ref. 2).~~ The selection of these trip setpoints is such that adequate protection is provided when all sensor and processing time delays are taken into account.

operation of the LOP Instrumentation

Setpoints adjusted consistent with the requirements of the Allowable Value ensure that the ~~consequences of accidents~~ will be acceptable, providing the unit is operated from within the LCOs at the onset of the accident and that the equipment functions as designed.

nominal

Table 3.3.5-1

LRM.

Allowable Values ~~and/or Nominal Trip Setpoints~~ are specified for each Function in ~~SR 3.3.5.3~~. Nominal Trip Setpoints are ~~also~~ specified in the ~~unit specific setpoint calculations~~. The trip setpoints are selected to ensure that the setpoint measured by the surveillance procedure does not exceed the Allowable Value if the relay is performing as required. If the measured setpoint does not exceed the Allowable Value, the relay is considered OPERABLE. Operation with a trip setpoint less conservative than the nominal Trip Setpoint, but within the Allowable Value, is acceptable provided that operation and testing is consistent with the assumptions of the unit specific setpoint ~~calculation~~ (Ref. ~~3~~).

1

methodology

2

APPLICABLE SAFETY ANALYSES

The LOP ~~DG start~~ instrumentation is required for the Engineered Safety Features (ESF) Systems to function in any accident with a loss of offsite power. Its design basis is that of the ESF Actuation System (ESFAS).

Accident analyses credit the loading of the DG based on the loss of offsite power during a loss of coolant accident (LOCA). The actual DG start has historically been associated with the ESFAS actuation. The DG loading has been included in the delay time associated with each safety system component requiring DG supplied power following a loss of offsite power. The analyses assume a non-mechanistic DG loading, which does not explicitly account for each individual component of loss of power detection and subsequent actions.

1

The required channels of LOP ~~DG start~~ instrumentation, in conjunction with the ESF systems powered from the DGs, provide unit protection in the event of any of the analyzed accidents discussed in Reference ~~2~~, in which a loss of offsite power is assumed.

3

2

The delay times assumed in the safety analysis for the ESF equipment include the 10 second DG start delay, and the appropriate sequencing delay~~, if applicable~~. The response times for ESFAS actuated equipment in LCO 3.3.2, "Engineered Safety Feature Actuation System (ESFAS)

BASES

where applicable.

APPLICABLE SAFETY ANALYSIS (continued)

2

Instrumentation," include the appropriate DG loading and sequencing delay.

The LOP ~~DG start~~ instrumentation channels satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

the loss of voltage and degraded voltage instrument channels specified in Table 3.3.5-1

satisfies the applicable Allowable Value requirements specified in Table 3.3.5-1

LCO

LOP instrumentation

a reliable source of emergency power is available

provided that the ± calibration tolerance band remains the same and the Allowable Value is administratively controlled accordingly in the conservative direction to meet the assumptions of the setpoint methodology. The conservative direction is established by the direction of the inequality applied to the Allowable Value.

The LCO for LOP ~~DG start~~ instrumentation requires that ~~[three] channels per bus of both the loss of voltage and degraded voltage Functions shall~~ be OPERABLE in MODES 1, 2, 3, and 4 when the LOP ~~DG start~~ Instrumentation supports safety systems associated with the ESFAS. In MODES 5 and 6, the ~~[three] channels~~ must be OPERABLE whenever the associated DG is required to be OPERABLE to ensure ~~that the automatic start of the DG is available~~ when needed. A channel is OPERABLE ~~with a trip setpoint value outside its calibration tolerance band~~ provided the trip setpoint "as-found" value ~~does not exceed its associated Allowable Value~~ and provided the trip setpoint "as-left" value is adjusted to a value within the "as-left" calibration tolerance band of the Nominal Trip Setpoint. A trip setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions. Loss of the LOP ~~DG Start~~ Instrumentation Function could result in the delay of safety systems initiation when required. ~~This could lead to unacceptable consequences during accidents.~~ During the loss of offsite power the DG powers the motor driven auxiliary feedwater pumps. Failure of these pumps to start would leave only one turbine driven pump, as well as an increased potential for a loss of decay heat removal through the secondary system.

For example,

for a loss of voltage

CTS ESFAS Bases

APPLICABILITY

The LOP ~~DG Start~~ Instrumentation Functions are required in MODES 1, 2, 3, and 4 because ESF Functions are designed to provide protection in these MODES. Actuation in MODE 5 or 6 is required whenever the required DG must be OPERABLE so that it can perform its function ~~on an LOP~~ or degraded ~~power to the vital~~ bus.

condition on an emergency

voltage

ACTIONS

In the event a channel's trip setpoint is found nonconservative with respect to the Allowable Value, or the channel is found inoperable, then the function that channel provides must be declared inoperable and the LCO Condition entered for the particular protection function affected.

Because the required channels are specified on a per bus basis, the Condition may be entered separately for each bus as appropriate.

A Note has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be

ACTIONS (continued)

A.1
Condition A applies to all LOP instrument functions specified in Table 3.3.5-1.
Condition A addresses the situation where one or more channels for one or more Functions are inoperable at the same time. The Required Action is to refer to Table 3.3.5-1 and to take the applicable Required Actions for the LOP functions affected. The Completion Times are those from the referenced Conditions and Required Actions.

specified in Table 3.3.5-1

entered independently for each Function ~~listed in the LCO~~. The Completion Time(s) of the inoperable channel(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.

The Condition is applicable to a single inoperable channel on one bus or a single inoperable channel on each bus.

~~A~~.1 B

Condition ~~A~~ applies to the LOP ~~DG start~~ Functions with one loss of voltage or one degraded voltage channel per bus inoperable.

B

If one channel is inoperable, Required Action ~~A.1~~ requires that channel to be placed in trip within 6 hours. With a channel in trip, the LOP ~~DG start~~ instrumentation channels are configured to provide a one-out-of-~~three~~ logic to initiate ~~a trip of the incoming offsite power~~.

the LOP protection function.

one

provided the corresponding instrument channels, electrical bus, and DG in the other train are OPERABLE.

A Note is added to allow bypassing an inoperable channel for up to 4 hours for surveillance testing of other channels. This allowance is made where bypassing the channel does not cause an actuation and where ~~at least two other channels are monitoring that parameter~~.

time necessary to accomplish the action in a safe manner

The specified Completion Time and time allowed for bypassing one channel are reasonable considering the ~~Function remains fully OPERABLE on every bus~~ and the low probability of an event occurring during these intervals.

the other electrical train remains OPERABLE to supply emergency power if required.

~~B~~.1 C

Condition ~~B~~ applies when more than one loss of voltage or more than one degraded voltage channel per bus are inoperable.

Required Action ~~B~~.1 requires restoring ~~all but~~ one channel per bus to OPERABLE status. The 1 hour Completion Time should allow ample time to repair most failures and takes into account the low probability of an event requiring an LOP ~~start occurring~~ during this interval.

Insert D.1

1

~~C~~.1 E

instrument actuation

instrument

A, B, C, or D

Condition ~~C~~ applies to each of the LOP ~~DG start~~ Functions when the Required Action and associated Completion Time for Condition ~~A or B~~ are not met.

In these circumstances the Conditions specified in LCO 3.8.1, "AC Sources - Operating," or LCO 3.8.2, "AC Sources - Shutdown," for the

The Condition is applicable to two inoperable channels on one bus or two inoperable channels on each bus.

BASES

ACTIONS (continued)

DG made inoperable by failure of the LOP ~~DG start~~ instrumentation are required to be entered immediately. The actions of those LCOs provide for adequate compensatory actions to assure unit safety.

SURVEILLANCE REQUIREMENTS

1

SR 3.3.5.1

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

The Frequency is based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

SR 3.3.5.1

~~SR 3.3.5.2~~

3

any

~~SR 3.3.5.2 is the~~ performance of a TADOT. A successful test of ~~the~~ required ~~contact~~(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications ~~and non-Technical Specifications tests at least once per refueling interval with applicable extensions.~~ This test is performed every [~~31~~ days]. The test checks trip devices that provide actuation signals directly, bypassing the analog process control equipment. ~~For these tests, the relay trip setpoints are verified and adjusted as necessary.~~ The Frequency is based on the known reliability

Surveillance Requirements.

92

CTS

1

The SR is modified by a Note that excludes verification of setpoint from the TADOT. The SR applies to the loss of voltage and degraded voltage relays for the 4160 V and 480 V emergency buses and setpoint verification requires removal of the relay and a bench calibration. Therefore, relay calibration and setpoint verification are accomplished during the 18-month CHANNEL CALIBRATION.



BASES

SURVEILLANCE REQUIREMENTS (continued)

of the relays and controls ~~and the multichannel redundancy available,~~ and has been shown to be acceptable through operating experience.

1

SR 3.3.5.2

~~SR 3.3.5.3~~

~~SR 3.3.5.3~~ is the performance of a CHANNEL CALIBRATION.

2

The setpoints, as well as the response to a loss of voltage and a degraded voltage test, shall include a single point verification that the trip occurs within the required time delay, as ~~shown in Reference 1~~ specified in the LRM.

For Unit 1 only, the time delay specified for the 4160 V emergency bus loss of voltage DG start relay, includes auxiliary relay times.

A CHANNEL CALIBRATION is performed every [18] months, or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy.

1

The Frequency of [18] months is based on operating experience and consistency with the typical industry refueling cycle and is justified by the assumption of an [18] month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

**Insert SR 3.3.5.3**

REFERENCES

1. ~~FSAR, Section [8.3].~~ Unit 1 and Unit 2 UFSAR, Chapter 8.
2. ~~FSAR, Chapter [15].~~ UFSAR, Chapter 14 for Unit 1 and Chapter 15 for Unit 2.
3. ~~Plant specific setpoint methodology study.~~ Westinghouse Setpoint Methodology for Protection Systems, WCAP-11419, Rev. 5 (Unit 1) and WCAP-11366, Rev. 7 (Unit 2).

2

**Insert 1 - Bases Background Section**

<u>Loss of Voltage Protection</u>

Unit 1

The Unit 1 loss of voltage protection consists of two relays for each of the 4160 V emergency buses. One relay actuates to open the normal supply breakers for the associated emergency buses (bus separation). The other loss of voltage relay provides a start signal for the DG associated with the bus. Both loss of voltage relays have the same nominal trip setpoint and Allowable Value (with different time delays).

Unit 2

The Unit 2 loss of voltage protection consists of three relays for each 4160 V emergency bus. Two relays on each bus actuate to open the normal supply breakers for the associated emergency buses (with a two-out-of-two logic per bus) to provide the bus separation function. The other loss of voltage relay provides a start signal for the associated DG. All three loss of voltage relays have the same nominal trip setpoint and Allowable Value (with different time delays).

<u>Degraded Voltage Protection</u>

In addition to the loss of voltage protection, degraded voltage protection for both Units is provided by two relays on each 4160 V emergency bus and two relays on each 480 V emergency bus. The two relays on each bus actuate upon a reduced voltage condition that exists for an extended time. The relays actuate (in a two-out-of-two logic per bus) to open the normal supply breakers and separate the affected emergency bus from the degraded voltage supply. The two-out-of-two logic helps prevent a spurious relay actuation from causing bus separation.

The Unit 1 and Unit 2 LOP instrumentation is described in UFSAR Chapter 8 (Ref. 1).

Insert Action D.1

<u>D.1</u>

Condition D applies when one loss of voltage channel per bus is inoperable and is applicable only to those LOP Functions on Table 3.3.5-1 with a single loss of voltage channel per bus. The Condition is applicable to a single inoperable channel on one bus or a single inoperable channel on each bus.

Required Action D.1 requires restoring the inoperable channel to OPERABLE status. The 1 hour Completion Time should allow ample time to repair most failures and takes into account the low probability of an event requiring a LOP instrument actuation during this interval.

Insert SR 3.3.5.3

SR 3.3.5.3

This SR ensures the individual channel ESF RESPONSE TIMES are less than or equal to the maximum values assumed in the accident analysis. The response time acceptance criteria for instrument channels with a required response time are specified in the LRM. Individual component response times are not modeled in the analyses. The analyses model the overall or total elapsed time, from the point at which the parameter exceeds the trip setpoint value at the sensor, to the point at which the equipment reaches the required functional state. Response time may be verified by any series of sequential, overlapping or total channel measurement such that the entire response time is measured.

The Bases for Surveillance Requirement 3.3.2.9 in LCO 3.3.2, "ESFAS Instrumentation" contains a more detailed description of how the required response time verification may be accomplished. The SR 3.3.2.9 Bases is applicable to SR 3.3.5.3 including the Unit 2 option to use the summation of allocated response times.

ESF RESPONSE TIME verifications are conducted on an 18 month STAGGERED TEST BASIS. The final actuation device response time, which makes up the bulk of the total response time, is included in the verification of each channel. The 18 month Frequency is consistent with the typical refueling cycle and is based on unit operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences.

B 3.3 INSTRUMENTATION

B 3.3.6 Unit 2 Containment Purge and Exhaust Isolation Instrumentation

BASES

BACKGROUND

The Unit 2 ~~C~~containment purge and exhaust isolation instrumentation closes the 42 inch containment isolation valves in the ~~Mini~~ Purge and Exhaust System ~~and the Shutdown Purge System.~~ This action isolates the containment atmosphere from the environment to minimize releases of radioactivity in the event of ~~an~~ a fuel handling accident involving recently irradiated fuel. ~~The Mini Purge System may be in use during reactor operation and the Shutdown Purge System will be in use with the reactor shutdown.~~

~~Containment purge and exhaust isolation initiates on a automatic safety injection (SI) signal through the Containment Isolation - Phase A Function, or by manual actuation of Phase A Isolation. The Bases for LCO 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," discuss these modes of initiation.~~

1

Two gaseous (Xe-133) ~~Four~~ radiation monitoring channels (2HVR-RQ104A&B) are ~~also~~ provided as input to the containment purge and exhaust isolation. The radiation monitors have a measurement range of $10^{-6}$ to $10^{-1}$ µCi/cc. ~~The four channels measure containment radiation at two locations. One channel is a containment area gamma monitor, and the other three measure radiation in a sample of the containment purge exhaust. The three purge exhaust radiation detectors are of three different types: gaseous, particulate, and iodine monitors. All four detectors will respond to most events that release radiation to containment. However, analyses have not been conducted to demonstrate that all credible events will be detected by more than one monitor. Therefore, for the purposes of this LCO the four channels are not considered redundant. Instead, they are treated as four one-out-of-one Functions. Since the purge exhaust monitors constitute a sampling system, various components such as sample line valves, sample line heaters, sample pumps, and filter motors are required to support monitor OPERABILITY.~~

The purge and exhaust ~~Each of the purge~~ systems has inner and outer containment isolation valves in its supply and exhaust ducts. A high radiation signal from the 2HVR-RQ104A gaseous radiation monitor closes the outer isolation valves in each penetration and a high radiation signal from the 2HVR-RQ104B gaseous monitor closes the inner isolation valves in each penetration. In addition to the automatic closure provided by the high radiation signal each containment purge and exhaust isolation valve may be closed manually by its individual control switch. ~~A high radiation signal from any one of the four channels initiates containment purge isolation, which closes both inner and outer containment isolation valves in the Mini Purge System and the Shutdown Purge System. These systems are described in the Bases for LCO 3.6.3, "Containment Isolation Valves."~~

Unit 2

BASES

APPLICABLE SAFETY ANALYSES

INSERT BVPS Safety Analysis

2

~~The safety analyses assume that the containment remains intact with penetrations unnecessary for core cooling isolated early in the event, within approximately 60 seconds. The isolation of the purge valves has not been analyzed mechanistically in the dose calculations, although its rapid isolation is assumed. The containment purge and exhaust isolation radiation monitors act as backup to the SI signal to ensure closing of the purge and exhaust valves. They are also the primary means for automatically isolating containment in the event of a fuel handling accident during shutdown. Containment isolation in turn ensures meeting the containment leakage rate assumptions of the safety analyses, and ensures that the calculated accidental offsite radiological doses are below 10 CFR 100 (Ref. 1) limits. [Due to radioactive decay, containment is only required to isolate during fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core withing the previous [ ] days).]~~

3

INSERT BVPS LCO Info

The containment purge and exhaust isolation instrumentation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The LCO requirements ensure that the instrumentation necessary to initiate Containment Purge and Exhaust Isolation, listed in Table 3.3.6-1, is OPERABLE~~.~~ for Unit 2.

1. Manual Initiation

The LCO requires one manual initiation channel per purge and exhaust system isolation valve to be OPERABLE. Containment Purge and Exhaust Isolation may be initiated at any time by using the individual valve control switches in the control room. Each Channel consists of a manual switch and interconnecting circuits to the valve actuator.

~~The LCO requires two channels OPERABLE. The operator can initiate Containment Purge Isolation at any time by using either of two switches in the control room. Either switch actuates both trains. This action will cause actuation of all components in the same manner as any of the automatic actuation signals.~~

~~The LCO for Manual Initiation ensures the proper amount of redundancy is maintained in the manual actuation circuitry to ensure the operator has manual initiation capability.~~

~~Each channel consists of one push button and the interconnecting wiring to the actuation logic cabinet.~~

~~2. Automatic Actuation Logic and Actuation Relays~~

~~The LCO requires two trains of Automatic Actuation Logic and Actuation Relays OPERABLE to ensure that no single random failure can prevent automatic actuation.~~

BASES

LCO (continued)

3

~~Automatic Actuation Logic and Actuation Relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b, SI, and ESFAS Function 3.a, Containment Phase A Isolation. The applicable MODES and specified conditions for the containment purge isolation portion of these Functions are different and less restrictive than those for their Phase A isolation and SI roles. If one or more of the SI or Phase A isolation Functions becomes inoperable in such a manner that only the Containment Purge Isolation Function is affected, the Conditions applicable to their SI and Phase A isolation Functions need not be entered. The less restrictive Actions specified for inoperability of the Containment Purge Isolation Functions specify sufficient compensatory measures for this case.~~

2 ~~3.~~ Containment Radiation

The LCO specifies ~~four~~ two required channels of gaseous radiation monitors to ensure that the radiation monitoring instrumentation necessary to initiate Containment Purge and Exhaust Isolation remains OPERABLE.

The required gaseous monitors are an in-line type and are mounted directly in the exhaust ductwork. An OPERABLE radiation monitor channel consists of the monitor and includes any associated circuitry necessary to provide the required isolation function.

~~For sampling systems, channel OPERABILITY involves more than OPERABILITY of the channel electronics. OPERABILITY may also require correct valve lineups, sample pump operation, and filter motor operation, as well as detector OPERABILITY, if these supporting features are necessary for trip to occur under the conditions assumed by the safety analyses.~~

~~4. Containment Isolation - Phase A~~

~~Refer to LCO 3.3.2, Function 3.a., for all initiating Functions and requirements.~~

APPLICABILITY

INSERT BVPS Applicability

4

~~The Manual Initiation, Automatic Actuation Logic and Actuation Relays, Containment Isolation - Phase A, and Containment Radiation Functions are required OPERABLE in MODES 1, 2, 3, and 4, and during movement of [recently] irradiated fuel assemblies [(i.e., fuel that has occupied part of a critical reactor core within the previous [ ] days)] within containment. Under these conditions, the potential exists for an accident that could release significant fission product radioactivity into containment. Therefore, the containment purge and exhaust isolation instrumentation must be OPERABLE in these MODES.~~

BASES

APPLICABLITY (continued)

4

While in MODES 5 and 6 without fuel handling in progress, the containment purge and exhaust isolation instrumentation need not be OPERABLE since the potential for radioactive releases is minimized and operator action is sufficient to ensure post accident offsite doses are maintained within the limits of Reference 1.

The Applicability for the containment purge and exhaust isolation on the ESFAS Containment Isolation-Phase A Functions are specified in LCO 3.3.2. Refer to the Bases for LCO 3.3.2 for discussion of the Containment Isolation-Phases A Function Applicability.

ACTIONS

5

The most common cause of channel inoperability is outright failure or drift of the bistable or process module sufficient to exceed the tolerance allowed by unit specific calibration procedures. Typically, the drift is found to be small and results in a delay of actuation rather than a total loss of function. This determination is generally made during the performance of a COT, when the process instrumentation is set up for adjustment to bring ~~it within specification~~. If the Trip Setpoint is less conservative than ~~the tolerance specified by the calibration procedure~~ specified in Table 3.3.6 - 1, the channel must be declared inoperable immediately and the appropriate Condition entered.

6

A Note has been added to the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed in Table 3.3.6-1. The Completion Time(s) of the inoperable channel(s)~~/train(s)~~ of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.

A.1

Condition A applies to the failure of one containment purge isolation radiation monitor channel. ~~Since the four containment radiation monitors measure different parameters, failure of a single channel may result in loss of the radiation monitoring Function for certain events. Consequently, the failed channel must be restored to OPERABLE status.~~ The 4 hours allowed to restore the affected channel is justified by the low likelihood of events occurring during this interval, and recognition that ~~one or more of~~ the remaining channels will ~~respond to most events.~~ isolate the purge and exhaust lines on high radiation.

Unit 2

BASES

APPLICABLITY (continued)

6

~~B.1~~

~~Condition B applies to all Containment Purge and Exhaust Isolation Functions and addresses the train orientation of the Solid State Protection System (SSPS) and the master and slave relays for these Functions. It also addresses the failure of multiple radiation monitoring channels, or the inability to restore a single failed channel to OPERABLE status in the time allowed for Required Action A.1.~~

~~If a train is inoperable, multiple channels are inoperable, or the Required Action and associated Completion Time of Condition A are not met, operation may continue as long as the Required Action for the applicable Conditions of LCO 3.6.3 is met for each valve made inoperable by failure of isolation instrumentation.~~

~~A Note is added stating that Condition B is only applicable in MODE 1, 2, 3, or 4.~~

B.1 and B.2 ~~C.1 and C.2~~

B

Condition ~~C~~ applies to all Containment Purge and Exhaust Isolation ~~Functions and addresses the train orientation of the SSPS and the master and slave relays for these~~ Functions. It ~~also~~ addresses the failure of multiple radiation monitoring channels, or the inability to restore a single failed channel to OPERABLE status in the time allowed for Required Action A.1. If ~~a train is inoperable, multiple channels are inoperable,~~ one or more manual initiation channel s are inoperable, or two radiation monitor channels are inoperable, or the Required Action and associated Completion Time of Condition A are not met, operation may continue as long as the Required Action to place and maintain containment purge and exhaust isolation valves in their closed position is met or the applicable Conditions of LCO ~~3.9.4,~~ 3.9.3 "Containment Penetrations," are met for each valve made inoperable by failure of isolation instrumentation. The Completion Time for these Required Actions is Immediately.

~~A Note states that Condition C is applicable during movement of [recently] irradiated fuel assemblies within containment.~~

SURVEILLANCE REQUIREMENTS

A Note has been added to the SR Table to clarify that Table 3.3.6-1 determines which SRs apply to which Containment Purge and Exhaust Isolation Functions.

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.6.1

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

The Frequency is based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

6

~~SR 3.3.6.2~~

~~SR 3.3.6.2 is the performance of an ACTUATION LOGIC TEST. The train being tested is placed in the bypass condition, thus preventing inadvertent actuation. Through the semiautomatic tester, all possible logic combinations, with and without applicable permissives, are tested for each protection function. In addition, the master relay coil is pulse tested for continuity. This verifies that the logic modules are OPERABLE and there is an intact voltage signal path to the master relay coils. This test is performed every 31 days on a STAGGERED TEST BASIS. The Surveillance interval is acceptable based on instrument reliability and industry operating experience.~~

~~SR 3.3.6.3~~

~~SR 3.3.6.3 is the performance of a MASTER RELAY TEST. The MASTER RELAY TEST is the energizing of the master relay, verifying contact operation and a low voltage continuity check of the slave relay~~

SURVEILLANCE REQUIREMENTS (continued)

6

~~coil. Upon master relay contact operation, a low voltage is injected to the slave relay coil. This voltage is insufficient to pick up the slave relay, but large enough to demonstrate signal path continuity. This test is performed every 31 days on a STAGGERED TEST BASIS. The Surveillance interval is acceptable based on instrument reliability and industry operating experience.~~

SR 3.3.6.2 ~~SR 3.3.6.4~~

7

A COT is performed every 92 days on each required channel to ensure the entire channel will perform the intended Function. A successful test of ~~the~~ any required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable ~~CHANNEL OPERATIONAL TEST~~ COT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications ~~and non-Technical Specifications tests at least once per refueling interval with applicable extensions~~ Surveillance Requirements. The Frequency is based on the staff recommendation for increasing the availability of radiation monitors according to NUREG-1366 (Ref. ~~2~~ 4). This test verifies the capability of the instrumentation to provide the containment purge and exhaust system isolation. The setpoint shall be left consistent with the current unit specific calibration procedure tolerance.

6

~~SR 3.3.6.5~~

~~SR 3.3.6.5 is the performance of a SLAVE RELAY TEST. The SLAVE RELAY TEST is the energizing of the slave relays. Contact operation is verified in one of two ways. Actuation equipment that may be operated in the design mitigation mode is either allowed to function or is placed in a condition where the relay contact operation can be verified without operation of the equipment. Actuation equipment that may not be operated in the design mitigation mode is prevented from operation by the SLAVE RELAY TEST circuit. For this latter case, contact operation is verified by a continuity check of the circuit containing the slave relay. This test is performed every [92] days. The Frequency is acceptable based on instrument reliability and industry operating experience.~~

SR 3.3.6.3 ~~SR 3.3.6.6~~

~~SR 3.3.6.6~~ SR 3.3.6.3 is the performance of a TADOT. This test is a check of the Manual Actuation Functions and is performed every [18] months. Each

BASES

SURVEILLANCE REQUIREMENTS (continued)

for each valve.

8

Manual Actuation Function is tested ~~up to, and including, the master relay coils. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.~~ ~~In some instances, the~~ The test includes actuation of the end device (i.e., ~~pump starts,~~ valve cycles~~, etc.~~).

~~The test also includes trip devices that provide actuation signals directly to the SSPS, bypassing the analog process control equipment.~~ The SR is modified by a Note that excludes verification of setpoints during the TADOT. The Functions tested have no setpoints associated with them.

6

The Frequency is based on the known reliability of the Function and the redundancy available, and has been shown to be acceptable through operating experience.

SR 3.3.6.4 ~~SR 3.3.6.7~~

9

A CHANNEL CALIBRATION is performed every [18] months, or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy.

The Frequency is based on operating experience and is consistent with the typical industry refueling cycle.

REFERENCES

1. ~~10 CFR 100.11.~~ Unit 2 UFSAR 15.7.4.

2. ~~NUREG-1366, [date].~~ NUREG-0800, Section 15.0.1, Rev.0, July 2000.

3. NRC Safety Evaluation Report for Unit 1 Amendment 23, 12/12/79.

4. NUREG-1366, Improvements to Technical Specifications Surveillance Requirements, 12/1/1992.

5. NUREG-1431, "Standard Technical Specifications for Westinghouse Plants," Rev. 2, April, 2001.

## 3.3.6 BASES INSERTS

BVPS Specific Safety Analysis

During refueling operations, the postulated event that results in the most severe radiological consequences is a fuel handling accident (Ref. 1). The limiting fuel handling accident analyzed in Reference 1, includes dropping a single irradiated fuel assembly and handling tool (conservatively estimated at 2500 pounds) directly onto another irradiated fuel assembly resulting in both assemblies being damaged. The analysis assumes a 100-hour decay time prior to moving irradiated fuel.

The applicable limits for offsite and control room dose from a fuel handling accident are specified in 10 CFR 50.67. Standard Review Plan, Section 15.0.1, Rev 0 (Ref. 2) provides an additional offsite dose criteria of 6.3 rem total effective dose equivalent (TEDE) for fuel handling accidents.

The water level requirements of LCO 3.9.6, "Refueling Cavity Water Level", in conjunction with a minimum decay time of 100 hours prior to irradiated fuel movement, ensure that the resulting offsite and control room dose from the limiting fuel handling accident is within the limits required by 10 CFR 50.67 and within the acceptance criteria of Reference 2 without the need for containment purge and exhaust isolation.

Therefore, the instrumentation requirements of LCO 3.3.6 "Containment Purge and Exhaust Isolation Instrumentation" are only applicable during refueling operations involving recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 100 hours). Current requirements based on the decay time of the fuel prevent the movement of recently irradiated fuel. However, the requirements for containment purge and exhaust isolation instrumentation are retained in the Technical Specifications in case these requirements are necessary to support fuel movement involving recently irradiated fuel.

BVPS Specific LCO Insert

The LCO is modified by a note that states "This specification is only applicable to Unit 2. Unit 1 relies on filtration of the containment purge and exhaust system effluent by an OPERABLE train of Supplemental Leak Collection and Release System (SLCRS) instead of isolation. Unit 1 must rely on filtration due to the design of the Unit 1 Containment Purge and Exhaust System ductwork where the radiation monitors are located. The Unit 1 ductwork is not designed to withstand a seismic event (Ref. 3).

BVPS Specific Applicability Insert

The containment purge and exhaust isolation instrument requirements are applicable during movement of recently irradiated fuel assemblies or the movement of fuel assemblies over recently irradiated fuel assemblies within containment because this is when there is a potential for the limiting fuel handling accident. In MODES 1, 2, 3, and 4, containment penetration requirements (including the purge and exhaust isolation valves) are addressed by LCO 3.6.3, "Containment Isolation Valves" and LCO 3.6.1, "Containment OPERABILITY". In MODES 5 and 6, when movement of irradiated fuel assemblies within containment is not being conducted,

(continued)

## 3.3.6 BASES INSERTS

(continued)

the potential for a fuel handling accident does not exist. Additionally, due to radioactive decay, a fuel handling accident that does not involve recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 100 hours) will result in doses that are well within the guideline values specified in 10 CFR 50.67 even without containment closure capability. Therefore, under these conditions no requirements are placed on the containment purge and exhaust isolation instrumentation.

Although movement of recently irradiated fuel is not currently permitted, the requirements for containment purge and exhaust isolation instrumentation are retained in the Technical Specifications in case these requirements are necessary to support the assumptions of a safety analysis for fuel movement involving recently irradiated fuel consistent with the guidance of Ref. 5.

V

B 3.3 INSTRUMENTATION

B 3.3.7 Control Room Emergency ~~Filtration~~ System (CREFS) Actuation Instrumentation

Ventilation

V

BASES

BACKGROUND

INSERT 1

1

~~The CREFS provides an enclosed control room environment from which the unit can be operated following an uncontrolled release of radioactivity. During normal operation, the Auxiliary Building Ventilation System provides control room ventilation. Upon receipt of an actuation signal, the CREFS initiates filtered ventilation and pressurization of the control room. This system is described in the Bases for LCO 3.7.10, "Control Room Emergency Filtration System."~~

~~The actuation instrumentation consists of redundant radiation monitors in the air intakes and control room area. A high radiation signal from any of these detectors will initiate both trains of the CREFS. The control room operator can also initiate CREFS trains by manual switches in the control room. The CREFS is also actuated by a safety injection (SI) signal. The SI Function is discussed in LCO 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation."~~

intake air

1

APPLICABLE SAFETY ANALYSES

V

1

INSERT 2

The control room must be kept habitable for the operators stationed there during accident recovery and post accident operations.
The CREFS acts to terminate the supply of unfiltered outside air to the control room, initiate filtration, and pressurize the control room. These actions are necessary to ensure the control room is kept habitable for the operators stationed there during accident recovery and post accident operations by minimizing the radiation exposure of control room personnel.

~~In MODES 1, 2, 3, and 4, the radiation monitor actuation of the CREFS is a backup for the SI signal actuation. This ensures initiation of the CREFS during a loss of coolant accident or steam generator tube rupture.~~

~~The radiation monitor actuation of the CREFS in MODES 5 and 6, and during movement of [recently] irradiated fuel assemblies are the primary means to ensure control room habitability in the event of a fuel handling or waste gas decay tank rupture accident.~~

The CREFS actuation instrumentation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

V

V

BASES

LCO

2

The LCO requirements ensure that instrumentation necessary to initiate the CREFS is OPERABLE.

(i.e., isolate control room ventilation and start one Unit 2 CREVS fan aligned for filtration and pressurization).

V 1. Manual Initiation

trains

INSERT 3

The LCO requires two ~~channels~~ OPERABLE. The operator can initiate the CREFS at any time by using either of two switches in the control room. This action will cause actuation of all components in the same manner as ~~any~~ of the automatic actuation signals.

(pushbuttons)

a single train

Each manual initiation train consists of a switch (pushbutton) in the control room, and the interconnecting wiring to the actuating relays.

The LCO for Manual Initiation ensures the proper amount of redundancy is maintained in the manual actuation circuitry to ensure the operator has manual initiation capability.

Each channel ~~consists of one push button and the interconnecting wiring to the actuation logic cabinet.~~

3

2. Automatic Actuation Logic and Actuation Relays

The LCO requires two trains of Actuation Logic and Relays OPERABLE to ensure that no single random failure can prevent automatic actuation.

Automatic Actuation Logic and Actuation Relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b., SI, in LCO 3.3.2. The applicable MODES and specified conditions for the CREFS portion of these functions are different and less ~~restrictive than those specified for their SI roles.~~ If one or more of the ~~SI~~ functions becomes inoperable in such a manner that only the CREFS function is affected, the Conditions applicable to their ~~SI~~ function need not be entered. The less restrictive Actions specified for inoperability of the CREFS Functions specify sufficient compensatory measures for this case.

Move to CIB Function description on next page

V

CIB

V

2 ~~3.~~ Control Room Radiation

Area

The LCO specifies two required Control Room ~~Atmosphere~~ Radiation Monitors ~~and two required Control Room Air Intake Radiation Monitors~~ to ensure that the radiation monitoring instrumentation necessary to initiate the CREFS remains OPERABLE.

V

The required Unit 1 radiation monitors are designated RM-1RM-218 A & B with a measurement range of $10^{-2}$ to $10^{3}$ mR/hr. The required Unit 2 radiation monitors are designated 2RMC-RQ201 & 202 with a measurement range of $10^{-2}$ to $10^{3}$ mR/hr.

For sampling systems, channel OPERABILITY involves more than OPERABILITY of channel electronics. OPERABILITY may also require correct valve lineups, sample pump operation, and filter

Moved from CTS Table 3.3-6.

BASES

LCO (continued)

3

motor operation~~, as well~~ as detector OPERABILITY~~, if these~~ supporting features are necessary ~~for trip to occur under~~ the conditions assumed by the ~~safety analyses~~.

3

Insert CIB Function description from previous page.

4

~~4.~~ ~~Safety Injection~~ Containment Isolation Phase B (CIB)

Refer to LCO 3.3.2, Function ~~1~~ 3.b, for all initiating Functions and requirements.

APPLICABILITY

INSERT 4

4

The ~~CREFS Functions~~ must be OPERABLE in MODES 1, 2, 3, ~~4, and~~ movement of [recently] ~~irradiated~~ fuel assemblies. ~~The Functions~~ must also be OPERABLE in MODES [5 and 6] ~~when required~~ for a waste gas decay tank rupture accident, to ~~ensure~~ a habitable environment ~~for the~~ control room operators.

V

The Applicability for the CREFS actuation on the ESFAS ~~Safety Injection~~ CIB Functions are specified in LCO 3.3.2. Refer to the Bases for LCO 3.3.2 for discussion of the ~~Safety Injection~~ Function Applicability.

ACTIONS

5

The ~~most common~~ cause of channel inoperability is outright ~~failure or~~ drift of the bistable or ~~process module~~ sufficient to exceed ~~the tolerance~~ allowed by the unit specific calibration ~~procedures. Typically~~, the drift is found to be small and results in a delay of ~~actuation~~ rather than ~~a total~~ loss of function. This determination ~~is generally~~ made during the performance ~~of a COT~~, when the ~~process~~ instrumentation is set up for adjustment to bring it within ~~specification~~.

If the Trip Setpoint is less conservative than ~~the tolerance specified by the calibration procedure~~ required in Table 3.3.7-1, the channel must be declared inoperable immediately and the appropriate Condition entered.

A Note has been added to the ACTIONS indicating that separate Condition entry is allowed for each Function. The Conditions of this Specification may be entered independently for each Function listed in Table 3.3.7-1 in the accompanying LCO. The Completion Time(s) of the inoperable channel(s)/train(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.

4

A.1

Condition A applies to the ~~actuation logic train Function of the CREFS, the~~ radiation monitor channel Functions, and the manual ~~channel~~ initiation train Functions.

ACTIONS (continued)

If one train is inoperable, or one radiation monitor channel is inoperable in one or more Functions, 7 days are permitted to restore it to OPERABLE status. The 7 day Completion Time is the same as is allowed if one train of the mechanical portion of the system is inoperable. The basis for this Completion Time is the same as provided in LCO 3.7.10. If the channel/train cannot be restored to OPERABLE status, one CREFS train must be placed in the emergency ~~radiation protection~~ pressurization mode of operation. This accomplishes the actuation instrumentation Function and places the unit in a conservative mode of operation.

4

V

~~The Required Action for Condition A is modified by a Note that requires placing one CREFS train in the toxic gas protection mode instead of the [radiation protection] mode of operation if the automatic transfer to toxic gas protection mode is inoperable. This ensures the CREFS train is placed in the most conservative mode of operation relative to the OPERABILITY of the associated actuation instrumentation.~~

~~B.1.1, B.1.2, and B.2~~ B.1 and B.2

V

Condition B applies to the failure of ~~two CREFS actuation trains,~~ two radiation monitor channels, or two manual ~~channels~~ trains. The first Required Action is to place one CREFS train in the emergency ~~[radiation protection]~~ pressurization mode of operation immediately. This accomplishes the actuation instrumentation Function that may have been lost and places the unit in a conservative mode of operation. ~~The applicable Conditions and Required Actions of LCO 3.7.10 must also be entered for the CREFS train made inoperable by the inoperable actuation instrumentation. This ensures appropriate limits are placed upon train inoperability as discussed in the Bases for LCO 3.7.10.~~

6 remaining

V

~~Alternatively, both trains may be placed in the emergency [radiation protection] mode. This ensures the CREFS function is performed even in the presence of a single failure.~~

4

~~The Required Action for Condition B is modified by a Note that requires placing one CREFS train in the toxic gas protection mode instead of the [radiation protection] mode of operation if the automatic transfer to toxic gas protection mode is inoperable. This ensures the CREFS train is placed in the most conservative mode of operation relative to the OPERABILITY of the associated actuation instrumentation.~~

BASES

ACTIONS (continued)

C.1 and C.2

Condition C applies when the Required Action and associated Completion Time for Condition A or B have not been met and the unit is in MODE 1, 2, 3, or 4. The unit must be brought to a MODE in which the LCO requirements are not applicable. To achieve this status, the unit must be brought to MODE 3 within 6 hours and MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

D.1 and D.2

moving recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 100 hours) or fuel assemblies over recently irradiated fuel. Fuel movement involving recently irradiated fuel

Condition D applies when the Required Action and associated Completion Time for Condition A or B have not been met when ~~[recently] irradiated fuel assemblies are being moved. Movement of [recently] irradiated fuel~~ assemblies must be suspended immediately to reduce the risk of accidents that would require CREFS actuation.

V

4

~~E.1~~

~~Condition E applies when the Required Action and associated Completion Time for Condition A or B have not been met in MODE 5 or 6. Actions must be initiated to restore the inoperable train(s) to OPERABLE status immediately to ensure adequate isolation capability in the event of a waste gas decay tank rupture.~~

SURVEILLANCE REQUIREMENTS

A Note has been added to the SR Table to clarify that Table 3.3.7-1 determines which SRs apply to which CREFS Actuation Functions.

V

SR 3.3.7.1

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

SURVEILLANCE REQUIREMENTS (continued)

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

The Frequency is based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

SR 3.3.7.2

COT

A COT is performed once every 92 days on each required channel to ensure the entire channel will perform the intended function. ~~This test verifies the~~ capability of the instrumentation to provide the CREFS actuation. A successful test of ~~the~~ required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable ~~CHANNEL OPERATIONAL TEST~~ of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications ~~and non-Technical Specifications tests at least once per refueling interval with applicable extensions~~. The setpoints shall be left consistent with the unit specific calibration procedure tolerance. ~~The Frequency is based on the known reliability of the monitoring equipment and has been shown to be acceptable through operating experience.~~

V

any

7

Surveillance Requirements

The Frequency is based on the staff recommendation for increasing the availability of radiation monitors according to NUREG-1366 (Ref. 3).

8

4

~~SR 3.3.7.3~~

~~SR 3.3.7.3 is the performance of an ACTUATION LOGIC TEST. The train being tested is placed in the bypass condition, thus preventing inadvertent actuation. Through the semiautomatic tester, all possible logic combinations, with and without applicable permissives, are tested for each protection function. In addition, the master relay coil is pulse tested for continuity. This verifies that the logic modules are OPERABLE and there is an intact voltage signal path to the master relay coils. This test is performed every 31 days on a STAGGERED TEST BASIS. The Frequency is justified in WCAP-10271-P-A, Supplement 2, Rev.1.~~

~~SR 3.3.7.4~~

~~SR 3.3.7.4 is the performance of a MASTER RELAY TEST. The MASTER RELAY TEST is the energizing of the master relay, verifying~~

SURVEILLANCE REQUIREMENTS (continued)

4

contact operation and a low voltage continuity check of the slave relay coil. Upon master relay contact operation, a low voltage is injected to the slave relay coil. This voltage is insufficient to pick up the slave relay, but large enough to demonstrate signal path continuity. This test is performed every 31 days on a STAGGERED TEST BASIS. *The Frequency is acceptable based on instrument reliability and industry operating experience.*

SR 3.3.7.5

SR 3.3.7.5 is the performance of a SLAVE RELAY TEST. The SLAVE RELAY TEST is the energizing of the slave relays. Contact operation is verified in one of two ways. Actuation equipment that may be operated in the design mitigation MODE is either allowed to function or is placed in a condition where the relay contact operation can be verified without operation of the equipment. Actuation equipment that may not be operated in the design mitigation MODE is prevented from operation by the SLAVE RELAY TEST circuit. For this latter case, contact operation is verified by a continuity check of the circuit containing the slave relay. This test is performed every [92] days. The Frequency is acceptable based on instrument reliability and industry operating experience.

SR 3.3.7.6 3

9

SR 3.3.7.6 is the performance of a TADOT. This test is a check of the Manual Actuation Functions and is performed every [18] months. Each Manual Actuation Function is tested ~~up to, and including, the master relay coils~~. A successful test of ~~the~~ required contact(s) of a channel relay may be performed ~~by the~~ verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications ~~and non-Technical Specifications tests at least once per refueling interval with applicable extensions~~. ~~In some instances, the test includes actuation of the end device (i.e., pump starts, valve cycles, etc.)~~.

7

any

Surveillance Requirements

The test may either include actuation of the end device (i.e., dampers close, and fan starts, etc.), or test up to the point of overlap with other tests that demonstrate actuation of the end devices.

~~The test also includes trip devices that provide actuation signals directly to the Solid State Protection System, bypassing the analog process control equipment.~~ The Frequency is based on the known reliability of the Function and the redundancy available, and has been shown to be acceptable through operating experience. The SR is modified by a Note that excludes verification of setpoints during the TADOT. The Functions tested have no setpoints associated with them.

V

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.7.~~7~~ 4

A CHANNEL CALIBRATION is performed every [18] months, or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy.

The Frequency is based on operating experience and is consistent with the typical industry refueling cycle.

REFERENCES ~~None.~~

1. Unit 1 UFSAR Table 11.3-7 and Unit 2 UFSAR Table 15.0-13.

2. NUREG-1431, "Standard Technical Specifications for Westinghouse Plants," Rev. 2, April, 2001.

3. NUREG-1366, Improvements to Technical Specifications Surveillance Requirements, 12/1/1992.

10

INSERT 1 (3.3.7 Bases Background)

The CREVS provides an enclosed common control room environment from which both units can be operated following an uncontrolled release of radioactivity. During normal operation, the control room ventilation system recirculates the control room air and provides unfiltered makeup air and cooling. Upon receipt of a CREVS actuation signal from either unit, the Unit 1 and 2 control room ventilation intake and exhaust ducts are isolated to prevent unfiltered makeup air from entering the control room. In addition, the CREVS actuation signal from either unit will also automatically start one Unit 2 CREVS fan to provide filtered makeup air to pressurize the control room. If the preferred Unit 2 CREVS fan does not start, the backup Unit 2 fan will automatically start. Unit 1 may take credit for the operation of one or both of the Unit 2 CREVS fans and filters. One of the two Unit 1 CREVS fans and single filter must be manually aligned and placed in service if required. Once the control room ventilation intake and exhaust ducts are isolated, and the CREVS fan is providing filtered makeup, control room ventilation is in the emergency pressurization mode of operation. The CREVS is described in the Bases for LCO 3.7.10, "Control Room Emergency Ventilation System."

The CREVS actuation instrumentation consists of redundant control room area radiation monitors for each unit, Containment Isolation - Phase B (CIB) signal from each unit, and two train related manual switches (pushbuttons) in each unit's control room. A high radiation signal from the radiation monitors in either unit, a CIB from either unit, or manual switch actuation from either unit such that both trains of CREVS receive an actuation signal, will initiate the CREVS actuation sequence described above. The CIB Function is discussed in LCO 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation."

INSERT 2 (3.3.7 Safety Analyses Bases)

The applicable safety analyses for all design basis accidents considered in MODES 1-4 (except LOCA) assume manual initiation of the emergency pressurization mode of operation of control room ventilation (i.e., control room ventilation isolation, filtered makeup, and pressurization). The LOCA accident analysis assumes an automatic control room ventilation system isolation on a CIB signal and subsequent manual initiation of a CREVS fan for filtered makeup and pressurization of the control room. Although the CIB signal will automatically start a CREVS fan and filtered flow path, a 30-minute delay to allow for manual initiation of a CREVS fan and filtered flow path is specifically assumed in all analyses to permit the use of a Unit 1 CREVS fan and filtration flow path which require manual operator action to place in service (Ref. 1).

The current safety analyses do not assume the control room area radiation monitors provide a CREVS actuation signal for any design basis accident. However, requirements for the radiation monitors to be OPERABLE are retained in case the monitors are required to support the assumptions of a fuel handling accident analysis for the movement of recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 100 hours) or the movement of fuel over recently irradiated fuel consistent with the guidance of Ref. 2.

INSERT 3 (3.3.7 LCO Bases)

However, when Unit 1 is relying on the Unit 1 CREVS train, as one of the two required trains, only one of the Unit 1 manual pushbuttons is required to start a Unit 2 Fan, but both Unit 1 pushbuttons must be capable of isolating the control room. In this case, the Unit 1 requirement (on Table 3.3.7-1) for two trains of manual initiation is met by one train of manual initiation that is capable of isolating the control room and starting a Unit 2 fan and one train of manual initiation that is capable of isolating the control room. The capability to manually place the Unit 1 CREVS fan and filtered flow path in service is addressed by the OPERABILITY requirements for the Unit 1 CREVS equipment contained in LCO 3.7.10, "Control Room Emergency Ventilation System."

INSERT 4 (3.3.7 Applicability Bases)

The CREVS manual actuation instrumentation must be operable in Modes 1, 2, 3, and 4 to provide the required CREVS initiation assumed in the applicable safety analyses. In Modes 5 and 6, when no fuel movement involving recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 100 hours) is taking place, there are no requirements for CREVS instrumentation OPERABILITY consistent with the safety analyses assumptions applicable in these MODES. In addition, both manual and radiation monitor instrument channels are required OPERABLE when moving recently irradiated fuel or moving fuel over recently irradiated fuel. Although the movement of recently irradiated fuel is not currently permitted, these requirements are retained in the Technical Specifications in case the CREVS instrumentation is necessary to support the assumptions of a safety analysis for fuel movement involving recently irradiated fuel, consistent with the guidance of Ref. 2.

1

B 3.3 INSTRUMENTATION

B 3.3.8 Fuel Building Air Cleanup System (FBACS) Actuation Instrumentation

BASES

BACKGROUND

The FBACS ensures that radioactive materials in the fuel building atmosphere following a fuel handling accident [involving handling recently irradiated fuel] or a loss of coolant accident (LOCA) are filtered and adsorbed prior to exhausting to the environment. The system is described in the Bases for LCO 3.7.13, "Fuel Building Air Cleanup System." The system initiates filtered ventilation of the fuel building automatically following receipt of a high radiation signal (gaseous or particulate) or a safety injection (SI) signal. Initiation may also be performed manually as needed from the main control room.

High gaseous and particulate radiation, each monitored by either of two monitors, provides FBACS initiation. Each FBACS train is initiated by high radiation detected by a channel dedicated to that train. There are a total of two channels, one for each train. Each channel contains a gaseous and particulate monitor. High radiation detected by any monitor or an SI signal from the Engineered Safety Features Actuation System (ESFAS) initiates fuel building isolation and starts the FBACS. These actions function to prevent exfiltration of contaminated air by initiating filtered ventilation, which imposes a negative pressure on the fuel building. Since the radiation monitors include an air sampling system, various components such as sample line valves, sample line heaters, sample pumps, and filter motors are required to support monitor OPERABILITY.

APPLICABLE SAFETY ANALYSES

The FBACS ensures that radioactive materials in the fuel building atmosphere following a fuel handling accident [involving handling recently irradiated fuel] or a LOCA are filtered and adsorbed prior to being exhausted to the environment. This action reduces the radioactive content in the fuel building exhaust following a LOCA or fuel handling accident so that offsite doses remain within the limits specified in 10 CFR 100 (Ref. 1).

The FBACS actuation instrumentation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The LCO requirements ensure that instrumentation necessary to initiate the FBACS is OPERABLE.

BASES

LCO (continued)

1. Manual Initiation

The LCO requires two channels OPERABLE. The operator can initiate the FBACS at any time by using either of two switches in the control room. This action will cause actuation of all components in the same manner as any of the automatic actuation signals.

The LCO for Manual Initiation ensures the proper amount of redundancy is maintained in the manual actuation circuitry to ensure the operator has manual initiation capability.

Each channel consists of one push button and the interconnecting wiring to the actuation logic cabinet.

2. Automatic Actuation Logic and Actuation Relays

The LCO requires two trains of Actuation Logic and Relays OPERABLE to ensure that no single random failure can prevent automatic actuation.

Automatic Actuation Logic and Actuation Relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b., SI, in LCO 3.3.2. The applicable MODES and specified conditions for the FBACS portion of these functions are different and less restrictive than those specified for their SI roles. If one or more of the SI functions becomes inoperable in such a manner that only the FBACS function is affected, the Conditions applicable to their SI function need not be entered. The less restrictive Actions specified for inoperability of the FBACS functions specify sufficient compensatory measures for this case.

3. Fuel Building Radiation

The LCO specifies two required Gaseous Radiation Monitor channels and two required Particulate Radiation Monitor channels to ensure that the radiation monitoring instrumentation necessary to initiate the FBACS remains OPERABLE.

For sampling systems, channel OPERABILITY involves more than OPERABILITY of channel electronics. OPERABILITY may also require correct valve lineups, sample pump operation, filter motor operation, detector OPERABILITY, if these supporting features are

1

BASES

LCO (continued)

necessary for actuation to occur under the conditions assumed by the safety analyses.

Only the Trip Setpoint is specified for each FBACS Function in the LCO. The Trip Setpoint limits account for instrument uncertainties, which are defined in the Unit Specific Setpoint Calibration Procedure (Ref. 2).

APPLICABILITY

The manual FBACS initiation must be OPERABLE in MODES [1, 2, 3, and 4] and when moving [recently] irradiated fuel assemblies in the fuel building, to ensure the FBACS operates to remove fission products associated with leakage after a LOCA or a fuel handling accident [involving handling recently irradiated fuel]. The automatic FBACS actuation instrumentation is also required in MODES [1, 2, 3, and 4] to remove fission products caused by post LOCA Emergency Core Cooling Systems leakage.

High radiation initiation of the FBACS must be OPERABLE in any MODE during movement of [recently] irradiated fuel assemblies in the fuel building to ensure automatic initiation of the FBACS when the potential for the limiting fuel handling accident exists. [Due to radioactive decay, the FBACS instrumentation is only required to be OPERABLE during fuel handling involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [ ] days).]

While in MODES 5 and 6 without fuel handling [involving handling recently irradiated fuel] in progress, the FBACS instrumentation need not be OPERABLE since a fuel handling accident [involving handling recently irradiated fuel] cannot occur.

ACTIONS

The most common cause of channel inoperability is outright failure or drift of the bistable or process module sufficient to exceed the tolerance allowed by unit specific calibration procedures. Typically, the drift is found to be small and results in a delay of actuation rather than a total loss of function. This determination is generally made during the performance of a COT, when the process instrumentation is set up for adjustment to bring it within specification. If the Trip Setpoint is less conservative than the tolerance specified by the calibration procedure, the channel must be declared inoperable immediately and the appropriate Condition entered.

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, the

BASES

ACTIONS (continued)

ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

A second Note has been added to the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed in Table 3.3.8-1 in the accompanying LCO. The Completion Time(s) of the inoperable channel(s)/train(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.

A.1

Condition A applies to the actuation logic train function of the Solid State Protection System (SSPS), the radiation monitor functions, and the manual function. Condition A applies to the failure of a single actuation logic train, radiation monitor channel, or manual channel. If one channel or train is inoperable, a period of 7 days is allowed to restore it to OPERABLE status. If the train cannot be restored to OPERABLE status, one FBACS train must be placed in operation. This accomplishes the actuation instrumentation function and places the unit in a conservative mode of operation. The 7 day Completion Time is the same as is allowed if one train of the mechanical portion of the system is inoperable. The basis for this time is the same as that provided in LCO 3.7.13.

B.1.1, B.1.2, B.2

Condition B applies to the failure of two FBACS actuation logic trains, two radiation monitors, or two manual channels. The Required Action is to place one FBACS train in operation immediately. This accomplishes the actuation instrumentation function that may have been lost and places the unit in a conservative mode of operation. The applicable Conditions and Required Actions of LCO 3.7.13 must also be entered for the FBACS train made inoperable by the inoperable actuation instrumentation. This ensures appropriate limits are placed on train inoperability as discussed in the Bases for LCO 3.7.13.

BASES

ACTIONS (continued)

Alternatively, both trains may be placed in the emergency [radiation protection] mode. This ensures the FBACS Function is performed even in the presence of a single failure.

C.1

Condition C applies when the Required Action and associated Completion Time for Condition A or B have not been met and [recently] irradiated fuel assemblies are being moved in the fuel building. Movement of [recently] irradiated fuel assemblies in the fuel building must be suspended immediately to eliminate the potential for events that could require FBACS actuation.

D.1 and D.2

Condition D applies when the Required Action and associated Completion Time for Condition A or B have not been met and the unit is in MODE 1, 2, 3, or 4. The unit must be brought to a MODE in which the LCO requirements are not applicable. To achieve this status, the unit must be brought to MODE 3 within 6 hours and MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

A Note has been added to the SR Table to clarify that table 3.3.8-1 determines which SRs apply to which FBACS Actuation Functions.

SR 3.3.8.1

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

BASES

SURVEILLANCE REQUIREMENTS (continued)

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

The Frequency is based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

SR 3.3.8.2

A COT is performed once every 92 days on each required channel to ensure the entire channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL OPERATIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. This test verifies the capability of the instrumentation to provide the FBACS actuation. The setpoints shall be left consistent with the unit specific calibration procedure tolerance. The Frequency of 92 days is based on the known reliability of the monitoring equipment and has been shown to be acceptable through operating experience.

SR 3.3.8.3

[ SR 3.3.8.3 is the performance of an ACTUATION LOGIC TEST. The actuation logic is tested every 31 days on a STAGGERED TEST BASIS. All possible logic combinations, with and without applicable permissives, are tested for each protection function. The Frequency is based on the known reliability of the relays and controls and the multichannel redundancy available, and has been shown to be acceptable through operating experience. ]

SR 3.3.8.4

SR 3.3.8.4 is the performance of a TADOT. This test is a check of the manual actuation functions and is performed every [18] months. Each manual actuation function is tested up to, and including, the master relay

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

coils. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. In some instances, the test includes actuation of the end device (e.g., pump starts, valve cycles, etc.). The Frequency is based on operating experience and is consistent with the typical industry refueling cycle. The SR is modified by a Note that excludes verification of setpoints during the TADOT. The Functions tested have no setpoints associated with them.

SR 3.3.8.5

A CHANNEL CALIBRATION is performed every [18] months, or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy. The Frequency is based on operating experience and is consistent with the typical industry refueling cycle.

REFERENCES

1. 10 CFR 100.11.
2. Unit Specific Setpoint Calibration Procedure.

1

B 3.3 INSTRUMENTATION

~~B 3.3.9 Boron Dilution Protection System (BDPS)~~

BASES

B 3.3.8 Boron Dilution Detection Instrumentation

BACKGROUND

Insert 1

1

~~The primary purpose of the BDPS is to mitigate the consequences of the inadvertent addition of unborated primary grade water into the Reactor Coolant System (RCS) when the reactor is in a shutdown condition (i.e., MODES 2, 3, 4, and 5).~~

~~The BDPS utilizes two channels of source range instrumentation. Each source range channel provides a signal to both trains of the BDPS. A unit computer is used to continuously record the counts per minute provided by these signals. At the end of each minute, an algorithm compares the counts per minute value (flux rate) of that 1 minute interval with the counts per minute value for the previous nine, 1 minute intervals. If the flux rate during a 1 minute interval is greater than or equal to twice the flux rate during any of the prior nine 1 minute intervals, the BDPS provides a signal to initiate mitigating actions.~~

~~Upon detection of a flux doubling by either source range instrumentation train, an alarm is sounded to alert the operator and valve movement is automatically initiated to terminate the dilution and start boration. Valves that isolate the refueling water storage tank (RWST) are opened to supply 2000 ppm borated water to the suction of the charging pumps, and valves which isolate the Chemical and Volume Control System (CVCS) are closed to terminate the dilution.~~

APPLICABLE SAFETY ANALYSES

Insert 2

1

~~The BDPS senses abnormal increases in source range counts per minute (flux rate) and actuates CVCS and RWST valves to mitigate the consequences of an inadvertent boron dilution event as described in FSAR, Chapter 15 (Ref. 1). The accident analyses rely on automatic BDPS actuation to mitigate the consequences of inadvertent boron dilution events.~~

~~The BDPS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).~~

LCO

Insert 3

1

~~LCO 3.3.9 provides the requirements for OPERABILITY of the instrumentation and controls that mitigate the consequences of a boron dilution event. Two redundant trains are required to be OPERABLE to provide protection against single failure.~~

~~Because the BDPS utilizes the source range instrumentation as its detection system, the OPERABILITY of the detection system, (i.e., the~~

LCO (continued)

1

flux doubling algorithm, the alarms, and signals to the various valves) for one SRM is also required for each train in the system to be considered OPERABLE. Therefore, with both SRMs inoperable for supporting the BDPS, both trains are inoperable.

APPLICABILITY

Insert 4

1

The BDPS must be OPERABLE in MODES [2], 3, 4, and 5 because the safety analysis identifies this system as the primary means to mitigate an inadvertent boron dilution of the RCS.

The BDPS OPERABILITY requirements are not applicable in MODE[S] 1 [and 2] because an inadvertent boron dilution would be terminated by a source range trip, a trip on the Power Range Neutron Flux - High (low setpoint nominally 25% RTP), or Overtemperature $\Delta T$. These RTS Functions are discussed in LCO 3.3.1, "RTS Instrumentation."

In MODE 6, a dilution event is precluded by locked valves that isolate the RCS from the potential source of unborated water (according to LCO 3.9.2, "Unborated Water Source Isolation Valves").

The Applicability is modified by a Note that allows the boron dilution flux doubling signal to be blocked during reactor startup in MODES 2 and 3. Blocking the flux doubling signal is acceptable during startup while in MODE 3, provided the reactor trip breakers are closed with the intent to withdraw rods for startup.

ACTIONS

1

The most common cause of channel inoperability is outright failure or drift of the bistable or process module sufficient to exceed the tolerance allowed by the unit specific calibration procedure. Typically, the drift is found to be small and results in a delay of actuation rather than a total loss of function. This determination of setpoint drift is generally made during the performance of a COT when the process instrumentation is set up for adjustment to bring it to within specification. If the Trip Setpoint is less conservative than the tolerance specified by the calibration procedure, the channel must be declared inoperable immediately and the appropriate Condition entered.

A.1

With one train of the BDPS OPERABLE, Required Action A.1 requires that the inoperable train must be restored to OPERABLE status within 72 hours. In this Condition, the remaining the BDPS train is adequate to provide protection. The 72 hour Completion Time is based on the BDPS

BASES

ACTIONS (continued)

1

~~Function and is consistent with Engineered Safety Feature Actuation System Completion Times for loss of one redundant train. Also, the remaining OPERABLE train provides continuous indication of core power status to the operator, has an alarm function, and sends a signal to both trains of the BDPS to assure system actuation.~~

1

A.1 and A.2

~~B.1, B.2.1, B.2.2.1, and B.2.2.2~~

the required channel

With ~~two trains~~ inoperable, ~~or the Required Action and associated Completion Time of Condition A not met~~, the initial action ~~(Required Action B.1)~~ is to suspend all operations involving positive reactivity additions immediately. This includes withdrawal of control or shutdown rods and intentional boron dilution. A Completion Time of 1 hour is provided to restore ~~one train~~ to OPERABLE status.

3.1.8, "Unborated Water Source Isolation Valves."

closed

A

addressed

As an alternate to restoring ~~one train~~ to OPERABLE status ~~(Required Action B.2.1)~~, Required Action ~~B~~.2.2.1 requires valves ~~listed~~ in LCO ~~3.9.2~~ ~~(Required Action A.2)~~ to be ~~secured~~ to prevent the flow of unborated water into the RCS. Once it is recognized that ~~two trains of the BDPS are~~ inoperable, the operators will be aware of the possibility of a boron dilution, and the ~~1 hour~~ Completion Time is adequate to complete the requirements of LCO ~~3.9.2~~.

is

1

A

3.1.8

Required Action ~~B~~.2.2.2 accompanies Required Action ~~B~~.2.2.1 to verify the SDM according to SR 3.1.1.1 within 1 hour and once per 12 hours thereafter. This backup action is intended to confirm that no unintended boron dilution has occurred while the ~~BDPS~~ was inoperable, and that the required SDM has been maintained. The specified Completion Time takes into consideration sufficient time for the initial determination of SDM and other information available in the control room related to SDM.

required channel

1

1

A.1

Required Action ~~[-]~~ is modified by a Note which permits plant temperature changes provided the temperature change is accounted for in the calculated SDM. Introduction of temperature changes, including temperature increases when a positive MTC exists, must be evaluated to ensure they do not result in a loss of required SDM.

required channel is

CHANNEL CHECK

SURVEILLANCE REQUIREMENTS

The ~~BDPS trains are~~ subject to a ~~COT~~ and a CHANNEL CALIBRATION.

1

~~SR 3.3.9.1~~ SR 3.3.8.1

2

Performance of the CHANNEL CHECK once every 12 hours ensures that gross failure of instrumentation has not occurred. A CHANNEL CHECK

The Surveillance Requirements of this LCO need not be performed on alternate detectors until connected and required OPERABLE in order to meet this LCO.

SURVEILLANCE REQUIREMENTS (continued)

is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the unit staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

The Frequency is based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

1

~~SR 3.3.9.2~~

~~SR 3.3.9.2 requires the performance of a COT every [92] days, to ensure that each train of the BDPS and associated trip setpoint are fully operational. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL OPERATIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. This test shall include verification that the boron dilution alarm setpoint is equal to or less than an increase of twice the count rate within a 10 minute period. The Frequency of [92] days is consistent with the requirements for source range channels in WCAP-10271-P-A (Ref. 2).~~

SR 3.3.8.2 ~~SR 3.3.9.3~~

~~SR 3.3.9.3~~ SR 3.3.8.2 is the performance of a CHANNEL CALIBRATION every [18] months. CHANNEL CALIBRATION is a complete check of the instrument loop, ~~including the sensor except the neutron detector of the SRM circuit~~ except for the source range neutron detectors which are excluded from the CHANNEL CALIBRATION as stated in the note that modifies the surveillance. The calibration method for neutron detectors is specified in the Bases of LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation." The test verifies that the channel responds to a measured

1

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

parameter within the necessary range and accuracy. ~~For the BDPS, the CHANNEL CALIBRATION shall include verification that on a simulated or actual boron dilution flux doubling signal the centrifugal charging pump suction valves from the RWST open, and the normal CVCS volume control tank discharge valves close in the required closure time of ≤ 20 seconds.~~

The Frequency is based on operating experience and consistency with the typical industry refueling cycle.

REFERENCES

~~1. FSAR, Chapter [15].~~

Unit 1 UFSAR Section 14.1.4 and Unit 2 UFSAR Section 15.4.6

~~2. WCAP-10271-P-A, Supplement 2, Revision 1, June 1990.~~

1

**Insert 1 New Background Section**

The purpose of the Boron Dilution Detection Instrumentation is to monitor core reactivity and provide indication of a boron dilution event in the Reactor Coolant System (RCS) when the reactor is in a shutdown condition (i.e., MODES 3, 4, and 5) with all rods fully inserted and the rod control system incapable of rod withdrawal.

The required Boron Dilution Detection Instrumentation consists of one of the two channels of OPERABLE Source Range instrumentation. The requirement for an OPERABLE Source Range channel ensures the capability to monitor core reactivity and detect a boron dilution event. In order to promptly detect a boron dilution event in MODE 3, the required Source Range instrumentation must provide both visual and audible (count rate) indication. The audible count rate helps to assure the prompt detection of an ongoing dilution event. In MODES 4 and 5, a boron dilution event is prevented by the requirements of LCO 3.1.8, "Unborated Water Source Isolation Valves." LCO 3.1.8 requires that unborated water source isolation valves be verified closed which precludes a dilution event (Ref. 1). Therefore, in MODES 4 and 5 the single channel of Source Range instrumentation required OPERABLE by this LCO is only used to monitor core reactivity and is required to provide visual indication only. As the requirements of LCO 3.1.8 preclude a boron dilution event in Modes 4 and 5, the audible count rate is not required for prompt detection of an inadvertent boron dilution in these MODES.

2

For Unit 1, two spare source range detectors are installed (N-33 and N-34). These alternate detectors may be substituted for detectors (N-31and N-32). For Unit 2, alternate detectors (i.e., Gamma-Metrics NE-52A and NE-52B) may also be used to meet the requirements of the LCO. The alternate detectors must be capable of providing the required indication (described above) in order to be considered OPERABLE.

**Insert 2 New Applicable Safety Analyses Section**

The Boron Dilution Detection Instrumentation specifies the OPERABILITY of instrumentation necessary to detect an inadvertent boron dilution event and monitor core reactivity.

The primary means of preventing an inadvertent boron dilution event during MODES 4 and 5 is the requirements of LCO 3.1.8. LCO 3.1.8 provides assurance the unborated water sources are maintained isolated to prevent dilution of the RCS (Ref. 1). In MODES 4 and 5, the requirement for an OPERABLE Source Range channel only serves to ensure the capability to monitor changes in core reactivity is maintained available. In MODES 4 and 5, no specific safety analysis assumptions are associated with the capability to monitor core reactivity. However, the capability to directly monitor core reactivity with the source range instrumentation provides valuable assurance that the core continues to be maintained in a safe condition.

In Mode 3, the requirements of LCO 3.1.8 to maintain unborated water source valves isolated is not applicable. In addition, with all rods fully inserted and the rod control system incapable of rod withdrawal, the trip functions of LCO 3.3.1, "Reactor Trip System" are not required OPERABLE. Therefore, in this plant condition, an OPERABLE Source Range channel that includes both visual and audible (count rate) indication is required to ensure prompt indication of an inadvertent boron dilution. The prompt notification of a boron dilution event in progress (via an increasing audible count rate) allows time for operator action to stop the dilution prior to criticality.

The Boron Dilution Detection Instrumentation satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

**Insert 3 New LCO Section**

LCO 3.3.8 specifies the OPERABILITY requirements for the instrumentation necessary to detect a boron dilution event and monitor core reactivity. In the applicable plant condition (all rods fully inserted and the rod control system incapable of rod withdrawal) the specified instrumentation only provides a core reactivity monitoring function and is not required to provide a reactor trip function. Therefore, in MODE 3, a single OPERABLE Source Range channel with both visual and audible (count rate) indication is required to provide prompt indication of an inadvertent boron dilution. In MODES 4 and 5, a single OPERABLE Source Range channel with visual indication is required to provide the necessary core reactivity monitoring function. In MODE 3 operation, with the rod control system capable of rod withdrawal, the requirements of LCO 3.3.1, "Reactor Trip System Instrumentation," are applicable and the requirements of LCO 3.3.8, including the audible count rate, are not applicable and no longer required to provide protection from an inadvertent boron dilution.

2

An alternate Source Range detector may be used to meet the requirements of the LCO as long as it is capable of providing the required indication(s) described above.

**Insert 4 New Applicability Section**

The Boron Dilution Detection Instrumentation must be OPERABLE in MODES 3, 4, and 5 with all rods fully inserted and the rod control system not capable of rod withdrawal. The requirements of this LCO ensure the capability to detect an inadvertent boron dilution of the RCS in Mode 3 and provide a means for monitoring core reactivity in MODES 4 and 5.

In MODES 3, 4, or 5 with the rod control system capable of rod withdrawal or one or more rods not fully inserted the nuclear instrumentation requirements of LCO 3.3.1, "Reactor Trip System Instrumentation," are applicable and specify that two source range channels must be OPERABLE with reactor trip capability. In addition, in MODE 3, operation with the rod control system capable of rod withdrawal is transitory in preparation for startup operations and manually controlled involving the close monitoring of core reactivity and dilution operations by the operating staff. Therefore, in MODE 3, with the rod control system capable of rod withdrawal, the requirements of LCO 3.3.8, including the audible count rate, are no longer applicable and not required to provide protection from an inadvertent boron dilution.

In MODES 4, 5, or 6 a dilution event is precluded by the requirements of LCO 3.1.8, " Unborated Water Source Isolation Valves" (Ref. 1). Therefore, in MODES 4, 5, and 6, the required Source Range instrumentation provides an indication of core reactivity. LCO 3.9.2, "Nuclear Instrumentation" addresses the Source Range instrument requirements in MODE 6.

During MODE 1 operation, the Source Range instrumentation is normally de-energized. In MODE 1, the Overtemperature $\Delta T$ Trip Function required OPERABLE in LCO 3.3.1, "Reactor Trip System," and the requirements of LCO 3.1.6, "Control Bank Insertion Limits provide for the necessary protection from, and detection of, an inadvertent boron dilution event at power (Ref. 1).

In MODE 2, the RCS is intentionally diluted and the rods withdrawn in order to achieve criticality and power operation. Operation in MODE 2 is transitory and manually controlled involving the close monitoring of core reactivity and dilution operation by the operating staff. As such, an inadvertent dilution of the RCS in this mode of operation is unlikely. However, in order to increase power during startup, the Source Range Trip Function required OPERABLE by LCO 3.3.1, must be manually blocked to prevent a reactor trip upon power escalation. If power escalation proceeds in an uncontrolled manner (due to inadvertent dilution) the Source Range Trip would not be blocked and would cause a reactor shutdown and provide protection and detection of an inadvertent dilution (Ref. 1).

# 3.3 B Instrumentation Bases

# JUSTIFICATIONS FOR DEVIATION

## *ITS 3.3.3 Post Accident Monitoring (PAM) Instrumentation Bases*

JUSTIFICATION FOR DEVIATION (JFD)

1. The ISTS 3.3.3 Bases discussing the required PAM instrumentation is revised extensively to incorporate changes related to the corresponding changes made to the generic standard specification and to incorporate changes related to the revised plant specific bases for PAM instrumentation included in License Amendment Request (LAR) numbers 314 (Unit 1) and 187 (Unit 2). Each Bases section is replaced with a plant specific bases. LARs 314/187 implement changes to the BVPS PAM instrumentation consistent with Westinghouse WCAP-15981. WCAP-15981 provides a methodology to evaluate PAM instrumentation on a plant specific basis. The application of the WCAP methodology results in a plant specific list of PAM instrumentation based on the instrumentation necessary to mitigate design basis accidents and those instruments determined to be important to safety using a plant specific Probabilistic Risk Assessment. Rather than include all Category 1 and Type A Regulatory Guide 1.97 qualified instrumentation as described in the ISTS Bases, the application of the WCAP methodology results in specifying a subset of the Regulatory Guide 1.97 instrumentation requirements. The bases for each PAM instrument is revised to include an improved plant specific technical basis for each instrument and a specific 10 CFR 50.36 criteria that is applicable for each instrument.
2. The Bases text for ISTS Action B.1 is revised to clarify the requirements consistent with the reporting requirements of Specification 5.6.5. Specification 5.6.5 requires that a report be submitted to the NRC within 14 days. ISTS Action B.1 invokes Specification 5.6.5. Therefore, it is not intended to over ride the provisions of Specification 5.6.5. The ITS Action B.1 requires that immediate action be initiated in accordance with Specification 5.6.5. Specification 5.6.5, in turn, allows 14 days to submit the required report. The proposed revision of the ISTS Action description clarifies this relationship between Action B.1 and Specification 5.6.5.
3. The generic ISTS bases for the Channel Check surveillance is revised to provide additional guidance for certain instrumentation. The proposed change clarifies the intent of the Channel Check surveillance for instrumentation for which other channels indicating the same process variable may not be available or where the process (e.g., flow) is not active. The proposed additional guidance is consistent with the ISTS bases stated intent of the Channel Check to provide a check for "gross channel failure" between channel calibrations rather than a precise measure of channel performance.

## *ITS 3.3.4 Remote Shutdown Instrumentation Bases*

JUSTIFICATION FOR DEVIATION (JFD)

1. The BVPS Emergency Shutdown Panels do not have reactor trip breaker position indication or control. Therefore, the BVPS Emergency Shutdown Panels only support maintaining the plant in a safe shutdown condition from a location outside of the control room. The reactor can not be placed in a shutdown condition from the BVPS Emergency Shutdown Panels. The reactor must be shutdown from the control room prior to evacuation. Therefore, references to initial reactivity control (i.e., reactor shutdown) are not applicable to BVPS.
2. The Main steam safety valves are not specified in the ITS Table B 3.3.4 -1 and are deleted from the bases text. Controls are provided on the BVPS Emergency Shutdown Panels for the SG atmospheric steam dump valves (ADVs). Control of the ADVs is specified on ITS Table B 3.3.4-1.
3. The Generic ISTS Bases text is revised to reflect BVPS specific design features and terminology for the emergency shutdown panels used in the remote shutdown system. This includes being more specific (i.e., identifying indication and control channels found on the BVPS emergency shutdown panels) when describing the instrumentation addressed by the ITS. In addition, the ISTS bases uses both "circuits and channels" to describe the required instrumentation. For consistency, the ISTS bases is revised to use the term channel when describing the required instrumentation. Specifically, the term "required channels" is used to describe the individual instrument functions specified for each remote shutdown function required operable by this LCO. The use of the term "channels and required channels" in the bases is more consistent with other ITS bases (i.e., 3.3.1 and 3.3.2) and provides a more common and appropriate term for defining the instrumentation addressed by the LCO.
4. Changes to the ITS Bases are made to reflect the corresponding ITS LCO requirements. Changes to the ITS LCO are justified in the discussions associated with the LCO changes.
5. The ISTS bases text regarding the operability of a remote shutdown system function is expanded and clarified to better explain the concept of maintaining the required Function operable. The operability requirement for a remote shutdown system Function is new for BVPS. The CTS shutdown system requirements only addressed a set of indications. Therefore, additional bases text was incorporated to more clearly explain the requirement for an operable function.

6. The ISTS channel check bases text is revised by the addition of a clarification consistent with changes made to the CTS requirements for channel checks. The CTS did not require a channel check be performed on the AFW flow indication when that indication was not in service. The CTS allowed this surveillance to be performed when the AFW system was supplying flow to the SGs. The corresponding ISTS channel check requirement does not provide a similar allowance for equipment or components that are not normally in service (except for the allowance to be de-energized). Therefore, a clarification was added to the BVPS ITS bases to explain that systems such as AFW which may be energized but are normally not in service, do not have to be placed in service in order to accomplish the required monthly channel check. Specifically, operation of the AFW system to feed the SGs in Mode 1 is not a desirable operating condition due to the temperature difference of the AFW. As such, the ISTS requirement should not be interpreted to require that each channel be indicating a specific value (i.e., something other than zero) in order to perform the channel check. An acceptable Channel Check only requires that instrument channels monitoring the same parameter should read approximately the same value. Therefore, the proposed change helps to explain the difference between the CTS and ISTS channel check requirements.

7. The ISTS bases text for the safety analyses section and the text describing the necessary support systems are revised to more accurately describe the safety analysis assumptions applicable to the Remote Shutdown System. The proposed changes are necessary to clarify that there are no design basis accidents that are required to be mitigated from the remote shutdown panels and that there is no requirement that a design basis accident (i.e., loss of offsite power or a loss of one train of safety equipment) must be assumed to occur simultaneously with the requirement to evacuate the control room. The applicable event for the Remote Shutdown System is an evacuation of the control room. Thus, the bases for the Remote Shutdown System TS requirements are significantly different than for most systems in the TS. Most systems in the TS have design basis requirements that are derived from the safety analyses assumptions for design basis accidents that involve a single active failure such as the loss of offsite power or one train of the equipment. Therefore, the TS requirements for most systems require redundant systems and components operable. As described above, the Remote Shutdown System is not subject to the same considerations as these other systems and redundant indications and controls and diesel generator controls are not required in the Technical Specifications. As such, the proposed changes to the bases text are consistent with the philosophy of the ISTS, as explained in the staff's Policy Statement on Improved Technical Specifications (i.e., to specify in the TS the minimum requirements associated with the assumptions of the applicable design bases accident analyses).

8. ISTS Table B 3.3.4 – 1 lists the requirements for the Remote Shutdown System. The ISTS table is revised to be more specific to the corresponding BVPS Emergency Shutdown Panel instrumentation, the corresponding CTS requirements, and the applicable BVPS safety analyses discussion in item 7 above. The addition of control functions to the list of Remote Shutdown System functions represents new TS requirements for BVPS. The current BVPS licensing bases for the Remote Shutdown System consists of indicating instrumentation only.

# *ITS 3.3.5 Loss of Power (LOP) Diesel Generator (DG) Start and Bus Separation Instrumentation Bases*

JUSTIFICATION FOR DEVIATION (JFD)

1. The ISTS 3.3.5 Bases text is revised as necessary to conform to changes made in the corresponding ITS 3.3.5 LCO. This includes such things as revising the title and scope of the specification from "DG start" to "DG start and bus separation instrumentation" or revisions made to the standard Action Conditions." These changes are discussed in the JFD associated with the change to the standard LCO.
2. The standard ISTS 3.3.5 bases text is revised to more accurately reflect the BVPS specific design, safety analyses, setpoint methodology, and licensing bases.
3. The standard Bases text describing the acceptable test of required relay contacts in the bases for a Trip Actuation Device Operational Test (TADOT) is revised to refer to "any" required contacts and to delete references to non-TS testing and a specific surveillance interval. By replacing "the" with "any", the proposed change removes the implication that the applicable instrument channel always has required relay contact(s). If the instrument channel for which the bases description applies has any required relay contacts, the discussion will still apply. In addition, the references to non-TS testing and a specific surveillance interval are removed. References to non-TS testing have no place in the TS. If such testing was required for the operability of the affected instrument channels it would be in the TS and if it is not associated with the operability of the required instrument channel it does not add any value to the bases discussion and may cause confusion regarding the operability requirements of the required instrumentation. The general reference that all contacts will be tested at least once per refueling is deleted because the specific surveillance interval for any TS testing is provided in the associated surveillance and does not need to be repeated in every TADOT bases description. In addition, specific surveillance intervals for various TS required instrumentation may change due to TS changes resulting from engineering evaluations, PRA, or other reasons. These changes could result in surveillance intervals that exceed a refueling cycle. Therefore, it is not appropriate or necessary to make a general statement that all required contacts will be tested at least once per refueling. The applicable TS will continue to define the surveillance interval associated with any required instrumentation.

# *ITS 3.3.6 Containment Purge and Exhaust Isolation Instrumentation Bases*

JUSTIFICATION FOR DEVIATION (JFD)

1. The ISTS 3.3.6 generic bases text is revised to be consistent with changes made to the associated specification (ITS 3.3.6) and to be consistent with the BVPS specific design. Changes made to the associated specification are described in more detail in the justifications provided for those changes. The proposed changes are necessary to accurately describe the corresponding BVPS system and its operation.
2. The ISTS generic safety analyses text is replaced with a description of the current Unit 2 analysis of record (UFSAR 15.4.7). The current fuel handling accident analysis and CTS requirements for moving recently irradiated fuel were approved by the NRC in Amendments 241 for Unit 1and 121 for Unit 2 (dated 8/30/01).
3. The ISTS generic text describing the LCO requirements is revised to be consistent with the proposed changes to the associated specification (ITS 3.3.6) and the BVPS specific design. Changes made to the associated specification are described in more detail in the justifications provided for those changes. The proposed changes include the elimination of references to ESFAS and SI and Phase A which are not part of the BVPS specific Purge and Exhaust Isolation System design. In addition, text was added to describe why the LCO is not applicable to BVPS Unit 1.
4. The ISTS 3.3.6 generic Applicability text is revised consistent with the BVPS specific design and safety analyses.
5. The ISTS 3.3.6 Action text is revised to delete descriptions and references that are more applicable to system designs that utilize ESFAS and the solid state protection system (SSPS) with trip setpoints and allowable values to accomplish Purge and Exhaust System isolation. This text is not directly applicable to the BVPS design and would be potentially confusing.
6. The ISTS 3.3.6 Action descriptions are revised to be consistent with changes made to the associated specification (ITS 3.3.6) and to be consistent with the BVPS specific design. Changes made to the associated specification are described in more detail in the justifications provided for those changes. The proposed changes are necessary to more accurately describe the BVPS system components being addressed by the Actions.
7. The standard Bases text describing the acceptable test of required relay contacts in the bases for a Channel Operational Test (COT) (or Trip Actuation Device Operational Test (TADOT)) is revised to refer to "any" required contacts and to delete references to non-TS testing and a specific surveillance interval. By replacing "the" with "any", the proposed change removes the implication that the applicable instrument channel always has required

relay contact(s). If the instrument channel for which the bases description applies has any required relay contacts, the discussion will still apply. This change will reduce the potential for confusion if a channel does not have relay contacts associated with it. In addition, the references to non-TS testing and a specific surveillance interval are removed. References to non-TS testing has no place in the TS. If such testing was required for the operability of the affected instrument channels it would be in the TS and if it is not associated with the operability of the required instrument channel it does not add any value to the bases discussion and may cause confusion regarding the operability requirements of the required instrumentation. The general reference that all contacts will be tested at least once per refueling is deleted because the specific surveillance interval for any TS testing is provided in the associated surveillance and does not need to be repeated in every COT (or TADOT) bases description. In addition, specific surveillance intervals for various TS required instrumentation may change due to TS changes resulting from engineering evaluations, PRA, or other reasons. These changes could result in surveillance intervals that exceed a refueling cycle. Therefore, it is not appropriate or necessary to make a general statement that all required contacts will be tested at least once per refueling. The applicable TS will continue to define the surveillance interval associated with any required instrumentation.

8. The ISTS 3.3.6 bases description of a TADOT surveillance is revised to more accurately reflect the BVPS manual switches being tested. The ISTS description of this surveillance includes information that is applicable to more complicated designs that utilize the SSPS Actuation relays (i.e., Master relays). The inclusion of this information does not accurately reflect the BVPS design that utilizes a manual switch for each valve and does not include SSPS functions. The proposed simplified BVPS bases description (test each valve switch and verify the valve cycles) is adequate to describe the required testing of the dedicated BVPS manual switches.

9. The ISTS 3.3.6 bases references are revised to include BVPS specific references consistent with the BVPS specific safety analyses and licensing bases.

## *ITS 3.3.7 Control Room Emergency Ventilation System (CREVS) Actuation Instrumentation Bases*

JUSTIFICATION FOR DEVIATION (JFD)

1. The ISTS 3.3.7 generic Background and Safety Analysis bases text is revised to be consistent with the BVPS system design and applicable safety analyses. The proposed changes are necessary to accurately describe the corresponding BVPS system design, operation and safety analyses.
2. The ISTS 3.3.7 generic description of the manual initiation instrument Function is revised to be more consistent with the BVPS design. This includes the train orientation of the BVPS manual switches, the elimination of references to the Solid State Protection System actuation logic, and a description of the Unit 1 CREVS Fans and filter which are operated by individual manual controls that are different than the CREVS initiation instrumentation being addressed by ITS 3.3.7.
3. The ISTS Bases reference to Solid State Protection System Automatic Actuation Logic and Actuation Relays as a separate CREVS initiation function is deleted. Subsequent Functions are re-numbered accordingly. The BVPS CREVS radiation monitor and manual initiation Functions do not utilize the SSPS for actuation. The BVPS CIB instrumentation does utilize the SSPS for actuation of the CREVS but the requirements for this instrumentation (including all surveillances) are specified in ITS 3.3.2, ESFAS Instrumentation" as denoted on ITS Table 3.3.7-1. References to SI are changed to CIB consistent with the BVPS design. The portion of the ISTS bases text describing the applicable Actions if only the CREVS portion of the CIB is inoperable is consistent with the proposed ITS 3.3.2 Action "C" Bases text and is retained under the CIB Function description in the Bases for ITS 3.3.7. These changes result in consistent references between ITS 3.3.2 and ITS 3.3.7 and are necessary for a system description more consistent with the BVPS design.
4. The ISTS 3.3.7 Bases text is revised to incorporate changes that correspond to the changes made to the associated specification (ITS 3.3.7). The changes made to ITS 3.3.7 are justified in the discussions associated with each change made to the specification. These Bases changes are necessary to conform to the BVPS specific version of ITS 3.3.7.
5. The ISTS 3.3.6 Action text is revised to delete descriptions and references that are more applicable to system designs that utilize ESFAS and the solid state protection system (SSPS) with trip setpoints and allowable values to accomplish CREVS actuation. This text is not directly applicable to the BVPS design and would be potentially confusing.
6. Minor editorial changes for clarification. Not technical.
7. The standard Bases text describing the acceptable test of required relay contacts in the bases for a Channel Operational Test (COT) and Trip Actuation Device Operational Test (TADOT) are revised to refer to "any" required contacts and to delete references to non-TS testing and a specific surveillance interval. By replacing "the" with "any", the proposed change removes the implication that the applicable instrument channel always has required

relay contact(s). If the instrument channel for which the bases description applies has any required relay contacts, the discussion will still apply. In addition, the references to non-TS testing and a specific surveillance interval are removed. References to non-TS testing have no place in the TS. If such testing was required for the operability of the affected instrument channels it would be in the TS and if it is not associated with the operability of the required instrument channel it does not add any value to the bases discussion and may cause confusion regarding the operability requirements of the required instrumentation. The general reference that all contacts will be tested at least once per refueling is deleted because the specific surveillance interval for any TS testing is provided in the associated surveillance and does not need to be repeated in every COT and TADOT bases description. In addition, specific surveillance intervals for various TS required instrumentation may change due to TS changes resulting from engineering evaluations, PRA, or other reasons. These changes could result in surveillance intervals that exceed a refueling cycle. Therefore, it is not appropriate or necessary to make a general statement that all required contacts will be tested at least once per refueling. The applicable TS will continue to define the surveillance interval associated with any required instrumentation.

8. The ISTS SR 3.3.7.2 description of the bases for the surveillance frequency is revised to be consistent with the bases for the surveillance frequency of other radiation monitors in the ISTS. The proposed change provides a more accurate bases description for this surveillance that is consistent with the bases for the 92 day frequency described in other specifications with radiation monitors and recommended in NURG-1366.

9. The ISTS bases for the manual initiation function TADOT surveillance is revised to conform to the BVPS specific design of this instrumentation. References to the SSPS actuation logic and relays are removed and the surveillance is clarified regarding damper operation and fan start. The proposed change is necessary because the BVPS CREVS manual instrumentation does not utilize the SSPS circuitry to operate the CREVS valves and fans.

10. The ISTS 3.3.7 bases is revised to include the applicable BVPS references for the bases text.

## *ITS 3.3.8 Fuel Building Air Cleanup System (FBACS) Actuation Instrumentation Bases*

JUSTIFICATION FOR DEVIATION (JFD)

1. Section deleted. See JFD for the 3.3.8 Specification in Enclosure 1.

## *ITS 3.3.8 Boron Dilution Detection Instrumentation Bases*

JUSTIFICATION FOR DEVIATION (JFD)

1. The ISTS Bases text is heavily modified to reflect the changes made to the associated specification and to incorporate the applicable information from the BVPS specific design and safety analyses. As described in the justification for changes made to the associated specification, ISTS 3.3.9, Boron Dilution Protection System is being replaced by the BVPS specific requirements for Boron Dilution Detection Instrumentation. The ISTS bases describes a two train system that actuates to mitigate a boron dilution accident (charging pump suction is transferred to the RWST upon a high flux signal. This system is not part of the BVPS design. The proposed BVPS ITS 3.3.8 (which replaces ISTS 3.3.9) incorporates source range neutron flux monitoring requirements previously contained within the Reactor Trip System Specification (CTS 3.3.1.1). As these BVPS source range indication requirements are not functions addressed by the ISTS Reactor Trip System Specification (3.3.1), the CTS requirements are moved to the functionally similar ISTS 3.3.9. The proposed change replaces an active two train mitigation system with the BVPS monitoring requirements and results in a substantial rewrite of the ISTS bases. See the justifications for the changes to the associated ISTS 3.3.9 LCO for additional information.
2. The allowance to use spare or alternate neutron detectors to meet the requirements of the LCO has already been reviewed and approved by the NRC for both BVPS Units 1 and 2 in Amendment # 217 (Unit 1) and # 94 (Unit 2) dated 8/26/98. The ITS Bases are modified by moving the information regarding spare detectors from the CTS and associated Bases.

ENCLOSURE 3

*CHANGES TO THE CTS*

CURRENT TECHNICAL SPECIFICATION (CTS) MARKUP
&
DISCUSSION OF CHANGES (DOCs)

Introduction

This enclosure contains the markup of the current BVPS Unit 2 Technical Specifications (TS), and where necessary to show a change to a BVPS Unit 1 TS that is not addressed by the associated Unit 2 markup and DOCs, a BVPS Unit 1 TS page is included. If a Unit 1 page is included it will be marked to show the change to the Unit 1 specific difference, and will not typically contain markups that repeat the applicable changes already addressed in the corresponding Unit 2 markup. Therefore, unless otherwise stated, each DOC applies to both Units 1 and 2 even though the change may only be marked on the Unit 2 TS.

The CTS is marked-up to show the changes necessary to convert to the Improved Standard Technical Specifications (ISTS) in NUREG-1431, Revision 2. The marked-up CTS result in the BVPS specific Improved Technical Specifications (ITS) contained in Enclosure 1.

**Note: CTS markups in this section are presented in ITS order.**

**Due to the major revisions made to certain CTS in this section, the CTS markups are presented in ITS order. This is different from other conversion documentation sections. As the ITS does not contain a radiation monitoring TS, the markup of CTS 3.3.3.1, "Radiation Monitoring" for ITS 3.3.6 shows the entire CTS 3.3.3.1 and serves as a roadmap for the contents of CTS 3.3.3.1.** The new ITS number is marked at the top of the first page of each CTS and the disposition of each CTS and ISTS is summarized in the Table included at the beginning of Enclosure 1 for each TS Section.

The marked-up TS are followed by the applicable DOCs. Each technical change and more complex administrative change marked on the TS has a unique alpha-numeric designator that corresponds to a specific DOC. Due to the large number of format, editorial and presentation differences between the CTS and the new standard TS, not all of these changes are identified in the marked-up CTS pages. The single generic A.1 administrative change DOC designated on the first page of each marked-up CTS addresses all the marked and unmarked editorial, format, and presentation changes necessary to convert that entire CTS to the corresponding new standard TS. Only the more complex (less obvious) administrative type changes made to the CTS are identified with individual administrative DOCs (i.e., A.2, A.3, etc.).

The DOCs are grouped by the category of the change (i.e., less restrictive, more restrictive, administrative, etc). Each category of change is also associated with a No Significant Hazards Consideration (NSHC) for that change in Enclosure 4.

Certain categories of change also have a sub-category or change type associated with the DOC. The sub-category or change type is used to further group the CTS changes in more specific sub-categories that utilize a common NSHC or DOC.

Each CTS change marked as "Less Restrictive", with no subcategory identified in the associated DOC to reference a generic NSHC, will have a "Specific" NSHC included in Enclosure 4. A description of the categories and types of changes follows.

ENCLOSURE 3 (continued)

Categories and Types of Changes to the CTS

I. The major categories utilized to group changes to the CTS are as follows:

A - Administrative

L - Less Restrictive

M - More Restrictive

LA - Removed Detail (Sections of Tech Spec text removed from CTS)

R - Relocated (Entire Tech Spec requirement removed from CTS)

II. The subcategories of Less Restrictive "L" changes are as follows: (1)

1. Relaxation of LCO Requirements
2. Relaxation of Applicability
3. Relaxation of Completion Time
4. Relaxation of Required Action
5. Deletion of Surveillance Requirement
6. Relaxation of Surveillance Requirement Acceptance Criteria
7. Relaxation of Surveillance Frequency
8. Deletion of Reporting Requirement

III. The types of Removed Detail "LA" changes are as follows: (2)

1. Removing Details of System Design and System Description, Including Design Limits
2. Removing Descriptions of System Operation
3. Removing Procedural Details for Meeting Tech Spec Requirements and Related Reporting Requirements
4. Removing Administrative Requirements Redundant to Regulations
5. Removing Performance Requirements for Indication-Only Instruments and Alarms

(1) Each subcategory of Less Restrictive change is associated with a corresponding NSHC in Enclosure 4.

(2) The types of Removed Detail changes all share a common "LA" NSHC in Enclosure 4.

ITS 3.3.3 Post Accident Monitoring

Draft page from Unit 2 LAR # 187
(Unit 1 LAR # 314)



POST ACCIDENT MONITORING (PAM) INSTRUMENTATION

3.3.3

A1

LIMITING CONDITION FOR OPERATION

3.3.3.8 The PAM instrumentation for each Function in Table ~~3.3-11~~ 3.3.3-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2 and 3*.

ACTION:

- - - - - - - - - - - - - - ~~GENERAL~~ NOTE - - - - - - - - - - - - - - - -

Separate ACTION statement entry is allowed for each Function.

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

In accordance with Specification 5.6.5.

A2

COND. A ~~a.1~~ One or more PAM Functions with one required channel inoperable, restore the required channel to OPERABLE status within 30 days, or

COND. B ~~a.2~~ Initiate action immediately to establish a preplanned alternate method of monitoring the PAM Function and submit a report to the NRC within the following 14 days to outline the alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channel of the Function to OPERABLE status, or

ITS 5.6.7

COND. E ~~a.3~~ Be in at least HOT STANDBY within the next 6 hours and HOT SHUTDOWN within the following 6 hours.

A3

COND. C ~~b.1~~ One or more PAM Functions with two or more required channels inoperable, restore the required channels to OPERABLE status within 7 days, or

COND. D ~~b.2~~ Initiate action immediately to establish a preplanned alternate method of monitoring the PAM Function and submit a report to the NRC ~~within the following 7 days~~ to outline the alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status, or

A3 ITS 5.6.7

COND. E ~~b.3~~ Be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

In accordance with Specification 5.6.5 except that the report required by Specification 5.6.5 must be submitted to the NRC within 7 days instead of 14 days.

---

* Power Range Neutron Flux PAM Function is not required in MODE 3.

LCO 3.3.3 Note

ITS 3.3.3

Draft page from LAR #s 314/187

INSTRUMENTATION

POST ACCIDENT MONITORING (PAM) INSTRUMENTATION

CTS Notes incorporated into ITS Surveillance Notes

SURVEILLANCE REQUIREMENTS

GENERAL NOTE

Surveillance Requirement 4.3.3.8.1 applies to each PAM Function in Table 3.3-11. Surveillance Requirement 4.3.3.8.2 applies to each PAM Function in Table 3.3-11 except for the Penetration Flow Path Containment Isolation Valve Position Function. Surveillance Requirement 4.3.3.8.3 applies only to the Penetration Flow Path Containment Isolation Valve Position Function in Table 3.3-11.

SR 3.3.3.1

~~4.3.3.8.1~~ Perform a CHANNEL CHECK at least once every 31 days.

SR 3.3.3.2

~~4.3.3.8.2~~ Perform a CHANNEL CALIBRATION at least once every 18 months.**

~~4.3.3.8.3~~ Perform a ~~CHANNEL FUNCTIONAL TEST~~ TADOT at least once every 18 months.

SR 3.3.3.3

A4

Note in ITS SR 3.3.3.2

** Neutron detectors are excluded from the CHANNEL CALIBRATION.

3.3.3-1

Draft page from LAR #s 314/187

TABLE ~~3.3-11~~

POST ACCIDENT MONITORING INSTRUMENTATION

| FUNCTION | REQUIRED CHANNELS |
|---|---|
| 1. Pressurizer Water Level | 2 |
| 2. Auxiliary Feedwater Flow Rate to Steam Generator (SG) | |
| a) SG "A" | 2 |
| b) SG "B" | 2 |
| c) SG "C" | 2 |
| 3. Power Range Neutron Flux | 2 |
| 4. High Head Safety Injection Flow | 1 |
| 5. SG Pressure | |
| a) SG "A" | 2 |
| b) SG "B" | 2 |
| c) SG "C" | 2 |
| 6. Refueling Water Storage Tank Level (Wide Range) | 2 |
| 7. Reactor Coolant System Pressure (Wide Range) | 2 |
| 8. SG Water Level (Wide Range) | 3 (1 per SG) |
| 9. Containment Area Radiation (High Range) | 2 |
| 10. Containment Pressure (Wide Range) | 2 |
| 11. Core Exit Temperature | 2[(c)] |
| 12. Penetration Flow Path Containment Isolation Valve Position | 2 per penetration flow path[(a)(b)] |

ITS Table 3.3.3.1 Notes

(a) Not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

(c) A channel consists of two core exit thermocouples.

UNIT 1 PAGE

ITS 3.3.3

Draft page from LAR #s 314/187

3.3.3-1

TABLE ~~3.3-11~~

Unit 1 specific values moved to ITS Table 3.3.3-1

POST ACCIDENT MONITORING INSTRUMENTATION

Same as Unit 2

| FUNCTION | REQUIRED CHANNELS |
|---|---|
| 1. Pressurizer Water Level | 2 |
| 2. Auxiliary Feedwater Flow Rate to Steam Generator (SG) | 3 (1 per SG) |
| 3. Power Range Neutron Flux | 2 |
| 4. High Head Safety Injection Flow | 1 |
| 5. SG Pressure | |
| a) SG "A" | 2 |
| b) SG "B" | 2 |
| c) SG "C" | 2 |
| 6. Refueling Water Storage Tank Level | 2 |
| 7. Reactor Coolant System Pressure (Wide Range) | 2 |
| 8. SG Water Level (Wide Range) | 3 (1 per SG) |
| 9. Containment Area Radiation (High Range) | 2 |
| 10. Containment Pressure (Wide Range) | 2 |
| 11. Core Exit Temperature | 2 (c) |
| 12. Penetration Flow Path Containment Isolation Valve Position | 2 per penetration flow path (a) (b) |

**Same as Unit 2**
Except Unit 1 only has one type of RWST Level (i.e., a wide range indication) and therefore the Unit 1 Function is not specifically labeled "Wide Range" on Table 3.3-11. As it is applicable to both Units, the "Wide Range" RWST Level designation is retained in the combined Unit ITS Table 3.3.3-1.

(a) Not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

(c) A channel consists of two core exit thermocouples.

**ITS 3.3.4 Remote Shutdown Instrumentation**

A1

LA1 → ITS Bases

A2

INSTRUMENTATION

REMOTE SHUTDOWN INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.4 The Remote Shutdown System Functions shall be OPERABLE.

~~3.3.3.5 The remote~~ shutdown monitoring ~~instrumentation~~ channels ~~shown in Table 3.3-9 shall be OPERABLE~~ with readouts displayed external to the control room.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

A4

NOTE: Separate Condition entry is allowed for each Function.

~~With the number of OPERABLE remote shutdown monitoring channels less than required by Table 3.3-9, either:~~

One or more required Functions inoperable.

A3

a. Restore the inoperable ~~channel~~ Function to OPERABLE status within ~~7~~ 30 days, or

L1

b. Be in MODE 3 within 6 hours and HOT SHUTDOWN within ~~the next~~ 12 hours.

M1

A6

SURVEILLANCE REQUIREMENTS

~~4.3.3.5 Each remote shutdown monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-6.~~

SR 3.3.4.1 Perform CHANNEL CHECK for each required indication instrumentation channel that is normally energized every 31 days.

M4

L3

SR 3.3.4.3 Verify each required control circuit and transfer switch is capable of performing the intended function every 36 months.

SR 3.3.4.2 NOTE: Neutron detectors are excluded from CHANNEL CALIBRATION. Perform CHANNEL CALIBRATION for each required indication instrumentation channel every 18 months.

A5

ITS 3.3.4 REMOTE SHUTDOWN INSTRUMENTATION

ITS Bases Table 3.3.4-1

Corresponding ITS Bases Table 3.3.4-1 Function Number.

TABLE 3.3-9

REMOTE SHUTDOWN PANEL MONITORING INSTRUMENTATION

LA2

| ITS Function No. | INSTRUMENTS* | MINIMUM CHANNELS OPERABLE |
|---|---|---|
| | ~~1. Intermediate Range Nuclear Flux~~ | ~~1~~ |
| | ~~2. Intermediate Range Startup Rate~~ | ~~1~~ |
| 1.a | ~~3.~~ Source Range Nuclear Flux | 1 |
| | ~~4. Source Range Startup Rate~~ | ~~1~~ |
| 3.a | 5. Reactor Coolant Temperature - Hot Leg | 1 |
| 3.b | 6. Reactor Coolant Temperature - Cold Leg | 1 |
| 2.a | 7. Pressurizer Pressure | 1 |
| 4.a | 8. Pressurizer Level | 1 |
| 3.c | 9. Steam Generator Pressure | 1/steam generator |
| 3.d | 10. Steam Generator Level | 1/steam generator |
| | ~~11. RHR Temperature - HX Outlet~~ | ~~1~~ |
| 3.e | 12. Auxiliary Feedwater Flow ~~Rate~~ | 1/steam generator |

L4

L5

or RCS Wide Range Pressure (Unit 2 only)

L4

M4

Insert ITS Control Functions in new ITS Bases Table for Remote Shutdown Instrumentation

LA2

ITS Bases Table 3.3.4-1

*Emergency Shutdown Panel

## ITS 3.3.4 REMOTE SHUTDOWN INSTRUMENTATION

Replaced by ITS SR 3.3.4.1 and ITS SR 3.3.4.3

A6

~~TABLE 4.3-6~~

~~REMOTE SHUTDOWN MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS~~

| INSTRUMENTS* | CHANNEL CHECK | CHANNEL CALIBRATION |
|---|---|---|
| ~~1. Intermediate Range Nuclear Flux~~ | ~~M~~ | ~~N.A.~~ |
| ~~2. Intermediate Range Startup Rate~~ | ~~M~~ | ~~N.A.~~ |
| 3. Source Range Nuclear Flux ~~(2)~~ | M ~~(4)~~ | ~~N.A.~~ 18 months |
| ~~4. Source Range Startup Rate (2)~~ | ~~M (4)~~ | ~~N.A.~~ |
| 5. Reactor Coolant Temperature - Hot Leg | M | R |
| 6. Reactor Coolant Temperature - Cold Leg | M | R |
| 7. Pressurizer Pressure or RCS Wide Range Pressure (indication) (Unit 2 only) | M | R |
| 8. Pressurizer Level | M | R |
| 9. Steam Generator Pressure | M | R |
| 10. Steam Generator Level | M | R |
| ~~11. RHR Temperature - HX Outlet (3)~~ | ~~M~~ | ~~R~~ |
| 12. Auxiliary Feedwater Flow ~~Rate~~ | ~~S/U (1)~~ M | R |

A5 L3 L4 L5 L4

L3 SR 3.3.4.1

M3

SR 3.3.4.2

LA2 Bases

* Emergency Shutdown Panel

M3 A5

~~(1) Channel check to be performed in conjunction with Surveillance Requirement 4.7.1.2.7 following an extended plant outage.~~

~~(2) Operability required in accordance with Specification 3.3.1.1.~~

~~(3) Operability required in accordance with Specification 3.4.1.3.~~

~~(4) Below P-6.~~ L3

UNIT 1 PAGES

ITS 3.3.4 REMOTE SHUTDOWN INSTRUMENTATION

TABLE 4.3-6

REMOTE SHUTDOWN PANEL MONITORING INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

| | INSTRUMENT | CHANNEL CHECK | CHANNEL CALIBRATION |
|---|---|---|---|
| 1. | Intermediate Range Nuclear Flux | M | N.A. |
| 2. | Intermediate Range Startup Rate | M | N.A. |
| 3. | Source Range Nuclear Flux (1) | M (4) | N.A. |
| 4. | Source Range Startup Rate (1) | M (4) | N.A. |
| 5. | Reactor Coolant Temperature - Hot Leg | M | R |
| 6. | Reactor Coolant Temperature - Cold Leg | M | R |
| 7. | Pressurizer Pressur[illegible] | [illegible] | R |
| 8. | Pressurizer Level | [illegible] | R |
| 9. | Steam Generator Pressure | M | R |
| 10. | Steam Generator Level | M | R |
| 11. | RHR Temperature - HX Outlet (3) | M ~~(5)~~ | R |
| 12. | Auxiliary Feedwater Flow Rate | S/U (2) | R |

***Note that changes to this portion of the Unit 1 TS are addressed in the markup of the Unit 2 TS.***

Notation

(1) Operability required in accordance with Specification 3.3.1.1.
(2) Channel check to be performed in conjunction with Surveillance Requirement 4.7.1.2.7 following an extended plant outage.
(3) Operability required in accordance with Specification 3.4.1.3.
~~(4) Below P-6.~~
~~(5) Channel check to be performed in conjunction with Surveillance Requirement 4.4.1.3.1.~~

L4

## ITS 3.3.4 REMOTE SHUTDOWN INSTRUMENTATION

Insert ITS Control Requirements in new ITS Bases Table 3.3.4.1

M4

| Function/Instrumentation or Control Parameter | Required Number of CHANNEL(S) OR CONTROL(S) |
|---|---|
| 1. Reactivity Control Function | |
| b. Boric Acid Transfer Pump (Control) | 1 |
| 2. Reactor Coolant System (RCS) Pressure Function | |
| b. Pressurizer Heater (Control) | 1 |
| 3. Decay Heat Removal via Steam Generators (SGs) Function | |
| f. Steam Generator Atmospheric Release Valve (Control) or Residual Heat Release Valve (control) (Unit 2 only) | 1 |
| g. AFW Pump (Control) | 1 |
| h. AFW Flow (Control) | 1 |
| 4. RCS Inventory Function | |
| b. Charging Pump (Control) | 1 |
| c. Charging Flow (Control) | 1 |
| d. Letdown Flow (Control) | 1 |
| 5. Support System Function | |
| a. Component Cooling Water Pump (control) | 1 |
| b. River Water Pump (control) (Unit 1 only) | 1 |
| c. Service Water Pump (control) (Unit 2 only) | 1 |

## New ITS 3.3.5 Loss of Power Diesel Generator Start and Bus Separation Instrumentation

Table 3.3.5-1 ~~TABLE 3.3-3 (Continued)~~

~~ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION~~

A1

| ~~FUNCTIONAL UNIT~~ | ~~TOTAL NO. OF CHANNELS~~ | ~~CHANNELS TO TRIP~~ | ~~MINIMUM CHANNELS OPERABLE~~ | ~~ALLOWABLE VALUE~~ | ~~APPLICABLE MODES~~ | ~~ACTION~~ |
|---|---|---|---|---|---|---|
| ~~5. TURBINE TRIP & FEEDWATER ISOLATION~~ | | | | | | |
| ~~b. Steam Generator Water Level-High-High, P-14~~ | ~~3/loop~~ | ~~2/loop in any operating loop~~ | ~~2/loop in each operating loop~~ | ~~≤ 81.1% of narrow range instrument span~~ | ~~1, 2, 3~~ | ~~14~~ |
| ~~c. Safety Injection~~ | ~~See Item 1 above for all Safety Injection initiating functions and requirements.~~ | | | | | |
| ~~6.~~ LOSS OF ~~POWER~~ Voltage | | | | | | |
| ~~a.~~ 4.16kv Emergency Bus | | | | | | |
| 2 ~~1.~~ ~~Undervoltage (Trip Feed)~~ Bus Separation | 2/4.16kv Bus | 2/4.16kv Bus | ~~2/4.16kv Bus~~ | ≥ ~~71.2% of rated Bus Voltage~~ 2962 V with a ~~1 ± 0.1 second time delay~~ 0.33 ± 0.03 seconds | 1, 2, 3, 4 | ~~33~~ Conditions B, C, & E |
| 1 ~~2.~~ ~~Undervoltage (Start Diesel)~~ Degraded Voltage | 1/4.16kv Bus | 1/4.16kv Bus | ~~1/4kv Bus~~ | ≥ ~~71.2% of rated Bus Voltage~~ 2962 V, 20 cycles ± 2 cycles | 1, 2, 3, 4 | ~~33~~ Conditions, D & E |
| 3 ~~b.~~ 4.16kv Emergency Bus ~~(Degraded Voltage)~~ Bus Separation | 2/4.16kv Bus | 2/Bus | ~~2/Bus~~ | ≥ ~~93.1% of rated Bus Voltage~~ 3873 V with a 90 ± 5 second time delay | 1, 2, 3, 4 | ~~34~~ Conditions B, C, & E |

Note: These requirements remain part of the ESFAS specification and changes to these requirements are discussed and documented in the markup and DOCs associated with the ESFAS specification.

A2 Required Channels on ITS Table 3.3.5-1

A3 Moved to ITS 3.3.5 Table 3.3.5-1

LA1 ITS 3.3.5 Bases

Allowable Values in Table 3.3.5-1

A ITS 3.3.5 Applicability

A4

L1

M1 INSERT NEW MODE

**New ITS 3.3.5 Loss of Power Diesel Generator Start and Bus Separation Instrumentation**

Moved to ITS 3.3.5 Table 3.3.5-1

A3

TABLE ~~3.3-3~~ 3.3.5-1 (Continued)

INSERT NEW MODE

M1

~~ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION~~

A2

| FUNCTIONAL UNIT | ~~TOTAL NO. OF CHANNELS~~ Required | ~~CHANNELS TO TRIP~~ | ~~MINIMUM CHANNELS OPERABLE~~ | ALLOWABLE VALUE | APPLICABLE MODES | ~~ACTION~~ Condition |
|---|---|---|---|---|---|---|
| ~~6. LOSS OF POWER (Continued)~~ | | | | | | |
| ~~c.~~ 4 480 Volt Emergency Bus ~~(Degraded Voltage)~~ Bus Separation | 2/480v Bus Required Channels on ITS Table 3.3.5-1 | 2/Bus ITS 3.3.5 Bases | ~~2/Bus~~ | 447V ≥ ~~93.1% of rated Bus Voltage~~ with a 90 ± 5 second time delay | 1, 2, 3, 4 | ~~34~~ A Conditions B, C, & E |

A2 LA1 A2 A4

| | | | | | | |
|---|---|---|---|---|---|---|
| 7. AUXILIARY FEEDWATER(3) | | | | | | |
| a. Automatic Actuation Logic and Actuation Relays | 2 | 1 | 2 | N.A. | 1, 2, 3 | 42 |
| b. Steam Gen. Water Level—Low-Low | | | | | | |
| 1. Start Turbine Driven Pump | 3/stm. gen. | 2/stm. gen. any stm. gen. | 2/stm. gen. | ≥ 16% of narrow range instrument span | 1, 2, 3 | 14 |
| Driven Pumps | | gen any 2 stm. gen. | gen. | range instrument span | | |
| c. Undervoltage-RCP (Start Turbine Driven Pump) | (3)-1/bus | 2 | 2 | ≥ 71.2% of rated bus voltage | 1, 2 | 14 |

**Note: These requirements remain part of the ESFAS specification and changes to these requirements are discussed and documented in the markup and DOCs associated with the ESFAS specification.**

(3) Manual initiation is included in Specification 3.7.1.2.

New ITS 3.3.5 Loss of Power Diesel Generator Start and Bus Separation Instrumentation

Note: Separate Condition Entry is allowed for each Function.

A11

~~TABLE 3.3-3 (Continued)~~

D.1 Restore inoperable channel to OPERABLE status within one hour.

L2

A5

~~ACTION STATEMENTS~~

~~ACTION 33~~ - With ~~the number of~~ OPERABLE Channels ~~one~~ less than the ~~Total~~ Number of ~~Channels,~~ the Emergency Diesel Generator associated with the 4kv Bus shall be declared inoperable and the ACTION Statements ~~for Specifications 3.8.1.1 or 3.8.1.2, as appropriate,~~ shall apply.

Cond. D

Cond. E

L3

6

L4

~~ACTION 34~~ - ~~a.~~ ~~With the number of~~ OPERABLE channels ~~one less than the Minimum Number of Channels, place the~~ inoperable ~~channel in the tripped condition within 1 hour;~~ otherwise, immediately enter the applicable ACTION statement(s) for the associated Emergency Diesel Generator made inoperable by the degraded voltage start instrumentation.

Insert Cond. B Note

A6 Cond. B

Cond. E

A7

~~b.~~ ~~With the number of~~ OPERABLE channels two ~~less than the Minimum Number of Channels, restore~~ at least one of the two ~~channels to~~ OPERABLE ~~status and place the other in the tripped condition within 1 hour;~~ otherwise, immediately enter the applicable ACTION statement(s) for the associated Emergency Diesel Generator made inoperable by the degraded voltage start instrumentation.

Cond. C

A8

Cond. E

~~ACTION 36 - The block of the automatic actuation logic introduced by a reset of safety injection shall be removed by resetting (closure) of the reactor trip breakers within one hour of an inadvertent initiation of safety injection providing that all trip input signals have reset due to stable plant conditions. Otherwise, the requirements of ACTION Statement 13 shall have been met.~~

~~ACTION 37 - (This ACTION is not used)~~

~~ACTIO~~

Note: These requirements remain part of the ESFAS specification and changes to these requirements are discussed and documented in the markup and DOCs associated with the ESFAS specification.

~~E,~~
~~ed~~
~~permissive annunciator window(s) (bistable status lights or computer checks) that the interlock is in its required state for the existing plant condition, or apply Specification 3.0.3.~~

~~ACTION 41 - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or declare the associated valve inoperable and take the ACTION required by Specification 3.7.1.5.~~

New ITS 3.3.5 Loss of Power Diesel Generator Start and Bus Separation Instrumentation

Draft Page From Unit 2 LAR No. 181

~~TABLE 4.3-2 (Continued)~~

~~ENGINEERING SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS~~

A10

TADOT

A9

A10

SR 3.3.5.2

A10

SR 3.3.5.1

| ~~FUNCTIONAL UNIT~~ | CHANNEL CHECK | CHANNEL CALIBRATION | ~~CHANNEL FUNCTIONAL TEST~~ | ~~MODES IN WHICH SURVEILLANCE REQUIRED~~ |
|---|---|---|---|---|
| ~~6. LOSS OF POWER~~ | | | | |
| ~~a. 4.16kv Emergency Bus~~ | | | | |
| ~~1. Undervoltage (Trip Feed)~~ | N.A. | R | Q | ~~1, 2, 3, 4~~ |
| ~~2. Undervoltage (Start Diesel)~~ | N.A. | R | Q | ~~1, 2, 3, 4~~ |
| ~~b. 4.16kv Emergency Bus (Degraded Voltage)~~ | N.A. | R | Q | ~~1, 2, 3, 4~~ |
| ~~c. 480v Emergency Bus (Degraded Voltage)~~ | N.A. | R | Q | ~~1, 2, 3, 4~~ |

A12

INSERT SR 3.3.5.3
ESFAS Response Time Surveillance Test Requirement 4.3.2.1.3

Note: Verification of setpoint not required

L5

Note: These requirements remain part of the ESFAS specification and changes to these requirements are discussed and documented in the markup and DOCs associated with the ESFAS specification.

| | | | | |
|---|---|---|---|---|
| ~~7. AUXILIARY FEEDWATER[4]~~ | | | | |
| ~~a. Automatic Actuation Logic and Actuation Relays~~ | | | ~~M[1]~~ | ~~1, 2, 3~~ |
| ~~b. Steam ... Level~~ | | | | |
| ~~1. Start Turbine Driven Pump~~ | ~~S~~ | ~~R~~ | ~~Q~~ | ~~1, 2, 3~~ |
| ~~2. Start Motor Driven Pumps~~ | ~~S~~ | ~~R~~ | ~~Q~~ | ~~1, 2, 3~~ |

~~(4) Manual initiation is included in Specification 3.7.1.2.~~

New ITS 3.3.5 Loss of Power Diesel Generator Start and Bus Separation Instrumentation

## UNIT 1 PAGES

3.3.5-1

TABLE ~~3.3-3 (Continued)~~

~~ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION~~

Changes to these Unit 1 requirements are addressed in the markups and DOCs associated with the corresponding Unit 2 requirements.

| FUNCTIONAL UNIT | TOTAL NO. OF CHANNELS | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | ALLOWABLE VALUE | APPLICABLE MODES | ACTION |
|---|---|---|---|---|---|---|
| 6. LOSS OF POWER | | | | | | |
| a. 4.16kv Emergency Bus Undervoltage | | | | | | |
| 1. Loss of Voltage (Trip Feed) | 1/4.16kv Bus | 1/4.16kv Bus | 1/4kv Bus | ≥ 2962 V ~~71.2% of rated bus voltage~~ with a 1 ± 0.1 second time delay | 1, 2, 3, 4 | 33 |
| 2. Loss of Voltage (Start Diesel) | 1/4.16kv Bus | 1/4.16kv Bus | 1/4kv Bus | ≥ 2962 V ~~71.2% of rated bus voltage~~ with a < 0.9 second time ~~delay~~ (includes auxiliary relay times) | 1, 2, 3, 4 | 33 |
| b. 4.16kv Emergency Bus Undervoltage (Degraded Voltage) | 2/4.16kv Bus | 2/Bus | 2/Bus | ≥ 3886 V ~~93.4% of rated bus voltage~~ with a 90 ± 5 second time delay | 1, 2, 3, 4 | 34 |
| c. 480 volt Emergency Bus Undervoltage (Degraded Voltage) | 2/480v Bus | 2/Bus | 2/Bus | ≥ 449 V ~~93.4% of rated bus voltage~~ with a 90 ± 5 second time delay | 1, 2, 3, 4 | 34 |

Changes to these Unit 1 requirements are addressed in the markups and DOCs associated with the corresponding Unit 2 requirements.

LA2

Bases

| New ITS 3.3.5 Loss of Power Diesel Generator Start and Bus Separation Instrumentation |
|---|

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more Functions with one or more required channels inoperable. | A.1 Enter the applicable Condition(s) referenced in Table 3.3.5-1 for the affected channel(s). | Immediately |
| B. One or more Functions with one channel per bus inoperable. | B.1 ------------------ - NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels provided the corresponding instrument channels, electrical bus, and DG in the other train are OPERABLE. ------------------ Place channel in trip. | 6 hours |
| C. One or more Functions with two channels per bus inoperable. | C.1 Restore one channel per bus to OPERABLE status. | 1 hour |
| D. One or more Functions with one channel per bus inoperable. | D.1 Restore inoperable channel to OPERABLE status. | 1 hour |
| E. Required Action and associated Completion Time not met. | E.1 Enter applicable Condition(s) and Required Action(s) for the associated DG made inoperable by LOP DG start or bus separation instrumentation. | Immediately |

## New Applicable Mode M1

When associated DG is required OPERABLE by LCO 3.8.2, "AC Sources - Shutdown."

New Unit 2 ITS 3.3.6 Containment Purge and Exhaust Isolation Instrumentation

~~REFUELING OPERATIONS~~ Instrumentation

A1

CONTAINMENT PURGE AND EXHAUST ISOLATION ~~SYSTEM~~

A2

Instrumentation for each Function in Table 3.3.6-1

3.3.6 Applicable to Unit 2 only. A3

LIMITING CONDITION FOR OPERATION

~~3.9.9~~ The Containment Purge and Exhaust isolation ~~system~~ shall be OPERABLE.

APPLICABILITY: During movement of recently irradiated fuel assemblies within the containment, and

A4

A14

During movement of fuel assemblies over recently irradiated fuel assemblies within the containment.

Immediately

ACTION: ITS Condition B

Note: Separate Condition entry is allowed for each Function.

~~With the Containment Purge and Exhaust isolation system inoperable,~~ close each of the purge and exhaust penetrations providing direct access from the containment atmosphere to the outside atmosphere. ~~The provisions of Specification 3.0.3 are not applicable.~~

ITS Required Action B.1 M1 A5 A6 Insert ITS Required Action B.2

SURVEILLANCE REQUIREMENTS

~~4.9.9 The Containment Purge and Exhaust isolation system shall be demonstrated OPERABLE at least once per 7 days by verifying that containment Purge and Exhaust isolation occurs on~~ manual initiation ~~and on a high radiation signal from each of the containment radiation monitoring instrumentation channels and the isolation time for each system isolation valve is within limits.~~

L1

Changes to the CTS Surveillance requirements for automatic valve actuation and timing are addressed in ITS 3.9.3, Containment Penetrations. See Markup and DOC for Unit 2 CTS 4.9.9 in Section 3.9.

Table 3.3.6-1, Function 1, 1 required channel per valve

SR 3.3.6.3 TADOT for Manual Switch

A8

A2

A7

INSERT ITS Instrumentation Surveillance Requirements for radiation monitors SR 3.3.6.1 & SR 3.3.6.2 & SR 3.3.6.4

## INSERT NEW ITS 3.3.6 ACTION CONDITION B

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. One or more manual initiation channels inoperable.<br><br>OR<br><br>Two radiation monitoring channels inoperable.<br><br>OR<br><br>Required Action and associated Completion Time for Condition A not met. | B.1 Place and maintain containment purge and exhaust valves in closed position.<br><br>OR<br><br>B.2 Enter applicable Conditions and Required Actions of LCO 3.9.3, "Containment Penetrations," for containment purge and exhaust isolation valves made inoperable by isolation instrumentation. | Immediately<br><br><br><br><br><br>Immediately |

## INSERT ITS 3.3.6 SURVEILLANCES

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.6.1 | Perform CHANNEL CHECK. | 12 hours |
| SR 3.3.6.2 | Perform COT. | 92 days |
| SR 3.3.6.3 | - NOTE -<br>Verification of setpoint is not required.<br><br>Perform TADOT. | 18 months |
| SR 3.3.6.4 | Perform CHANNEL CALIBRATION. | 18 months |

**New Unit 2 ITS 3.3.6 Containment Purge and Exhaust Isolation Instrumentation**

INSTRUMENTATION

A1

3/4.3.3 ~~MONITORING~~ INSTRUMENTATION

~~RADIATION~~ MONITORING

A9

**The Containment Purge and Exhaust Isolation Instrumentation for each Function in Table 3.3.6-1 shall be OPERABLE.**

LIMITING CONDITION FOR OPERATION

3.3.3.1 The ~~radiation monitoring~~ instrumentation ~~channels~~ shown in Table 3.3-6 shall be OPERABLE ~~with their alarm/trip~~ setpoints within the specified ~~limits~~.

APPLICABILITY: As shown in Table 3.3-6.

One radiation monitor inoperable, restore to OPERABLE status within 4 hours.

L2

ACTION: **ITS 3.3.6 Action A**

~~a.~~ With a ~~radiation~~ monitoring channel alarm/~~trip~~ setpoint exceeding the value ~~shown in Table~~ 3.3-6, adjust the setpoint to within ~~the~~ limit within ~~4 hours~~ or declare the channel ~~inoperable~~.

**ITS 3.3.6 Action B**

M2

~~b.~~ ~~With one or more radiation monitoring channels inoperable,~~ take the ACTION shown in Table 3.3-6.

A10

~~c.~~ ~~The provisions of Specification 3.0.3 are not applicable.~~

**Action A not met or two inoperable radiation monitor channels inoperable**

L2

SURVEILLANCE REQUIREMENTS

4.3.3.1 Each ~~radiation~~ monitoring instrumentation ~~channel~~ shall be demonstrated OPERABLE by ~~the performance~~ of the CHANNEL CHECK, CHANNEL CALIBRATION and ~~CHANNEL~~ FUNCTIONAL ~~TEST~~ operations during the modes and ~~at the~~ frequencies shown in Table 4.3-3.

A11

**ITS 3.3.6 Surveillance Requirements for radiation monitors**
**SR 3.3.6.1 & SR 3.3.6.2 & SR 3.3.6.4**

New Unit 2 ITS 3.3.6 Containment Purge and Exhaust Isolation Instrumentation

Draft Page From Unit 2 LAR # 187 (PAM Revision)

TABLE 3.3-6

RADIATION MONITORING INSTRUMENTATION

| INSTRUMENT | MINIMUM CHANNELS OPERABLE | APPLICABLE MODES | SETPOINT (3) | MEASUREMENT RANGE | ACTION |
|---|---|---|---|---|---|
| 1. AREA MONITORS | | | | | |
| a. Deleted | | | | | |
| b. Deleted | | | | | |
| c. Control Room Area (2RMC-RQ201 & 202) | 2 | 1,2,3,4, and (4) | ≤ 0.476 mR/hr | $10^{-2}$ to $10^{3}$ mR/hr | 46,47 |
| 2. PROCESS MONITORS | | | | | |
| a. Containment | | | | | |
| i. Gaseous Activity (Xe-133) | 1 | 1,2,3 & 4 | N/A | $10^{-6}$ to $10^{-1}$ µCi/cc | 20 |
| ii. Particulate Activity (I-131) RCS Leakage Detection (2RMR-RQ303A) | 1 | 1,2,3 & 4 | N/A | $10^{-10}$ to $10^{-5}$ µCi/cc | 20 |
| ~~b. Deleted~~ | | | | | |

Note: These portions of the requirements are addressed in ITS 3.3.7, Control Room Emergency Ventilation System (CREVS) Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.3.7.

Note: These portions of the requirements are addressed in ITS 3.4.15, RCS Leakage Detection Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.4.15.

New ITS 3.3.6 Containment Purge and Exhaust Isolation Instrumentation

**Draft Page From Unit 2 LAR # 187 (PAM Revision)**

~~TABLE 3.3-6 (Continued)~~ Table 3.3.6-1

~~RADIATION MONITORING INSTRUMENTATION~~ Containment Purge and Exhaust Isolation Instrumentation

| INSTRUMENT | ~~MINIMUM CHANNELS OPERABLE~~ (A12: ITS Table 3.3.6-1 Required Channels) | APPLICABLE MODES | SETPOINT (3) (ITS Table 3.3.6-1 Trip Setpoint) | MEASUREMENT RANGE | ACTION |
|---|---|---|---|---|---|
| 2. PROCESS MONITORS (Continued) | | | | | |
| ~~c. Noble Gas and Effluent Monitors~~ | | | | | |
| ~~i. Deleted~~ | | | | | |
| ii. Containment Purge Exhaust (Xe-133) (2HVR-RQ104A & B) (ITS 3.3.6 Bases) (LA1) | 2 | (5) (ITS 3.3.6 Applicability) | $\leq 1.01 \times 10^{-3}$ μCi/cc (ITS Table 3.3.6-1 setpoint) | $10^{-6}$ to $10^{-1}$ μCi/cc (ITS 3.3.6 Bases) (LA1) | 22 (ITS Action Condition B) |

New Unit 2 ITS 3.3.6 Containment Purge and Exhaust Isolation Instrumentation

Draft Page From Unit 2 LAR # 187

~~TABLE 3.3-6 (Continued)~~

Note: These portions of the requirements are addressed in ITS 3.3.7, Control Room Emergency Ventilation System (CREVS) Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.3.7.

TABLE NOTATIONS

(1) ~~Not used.~~

(2) ~~Not used.~~

Table 3.3.6-1 Trip Setpoint

(3) Above background.

(4) ~~During movement of recently irradiated fuel assemblies and during movement of fuel assemblies over recently irradiated fuel assemblies.~~

(5) During movement of recently irradiated fuel assemblies within the containment and during movement of fuel assemblies over recently irradiated fuel assemblies within the containment.

ITS 3.3.6 Applicability

ACTION STATEMENTS

~~ACTION 20 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.6.1.~~

~~ACTION 21 - This Action is not used.~~

~~ACTION 22 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.9.9.~~

M2

~~ACTION 35 - This Action is not used.~~

Note: These portions of the requirements are addressed in ITS 3.4.15, RCS Leakage Detection Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.4.15.

B.1 Place and maintain containment purge and exhaust valves in closed position immediately.

OR

B.2 Enter applicable Conditions and Required Actions of LCO 3.9.3, "Containment Penetrations," for containment purge and exhaust isolation valves made inoperable by isolation instrumentation immediately.

A6

TABLE 3.3-6 (Continued)

ACTION STATEMENTS (Continued)

ACTION 46 - With the number of OPERABLE channels one less than required by the Minimum Channels OPERABLE requirement

**Note: These portions of the requirements are addressed in ITS 3.3.7, Control Room Emergency Ventilation System (CREVS) Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.3.7.**

ACTION 47 - With no OPERABLE channels either restore one inoperable channel to OPERABLE status within 1 hour or close the control room series normal air intake and exhaust isolation dampers.

TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| INSTRUMENT | CHANNEL CHECK | CHANNEL CALIBRATION | CHANNEL FUNCTIONAL TEST | MODES IN WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|
| 1. AREA MONITORS | | | | |
| a. Dele[ted] | | | | |
| b. Dele[ted] | | | | |
| c. Control Room Area (2RMC-RQ201 & 202) | S | R | M | 1, 2, 3, 4, and ## |
| 2. PROCESS MONITORS | | | | |
| a. Containment | | | | |
| i. Gaseous Activity RCS Leakage Detection | S | R# | M | 1, 2, 3 & 4 |
| RCS Leakage Detection (2RMR-RQ303A) | | | | |
| b. Deleted | | | | |

Note: These portions of the requirements are addressed in ITS 3.3.7, Control Room Emergency Ventilation System (CREVS) Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.3.7.

Note: These portions of the requirements are addressed in ITS 3.4.15, RCS Leakage Detection Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.4.15.

\# Surveillance interval may be extended to the upcoming refueling outage if the interval between refueling outages is greater than 18 months.

\## During movement of recently irradiated fuel assemblies and during movement of fuel assemblies over recently irradiated fuel assemblies.



Note: These portions of the requirements are addressed in ITS 3.3.7, Control Room Emergency Ventilation System (CREVS) Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.3.7.

TABLE 4.3-3 (Continued)

| INSTRUMENT | CHANNEL CHECK | CHANNEL CALIBRATION | ~~CHANNEL FUNCTIONAL TEST~~ CHANNEL OPERATIONAL TEST A13 | MODES IN WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|
| 2. PROCESS MONITORS (Continued) | | | | |
| c. Noble Gas Effluent Monitors | | | | |
| i. Deleted | | | | |
| ii. Containment Purge Exhaust (2HVR-RQ104A & B) LA1 ITS 3.3.6 Bases | ~~S~~ SR 3.3.6.1 | ~~R~~ SR 3.3.6.4 | ~~M~~ Q L4 SR 3.3.6.2 | ### ITS 3.3.6 Applicability |

### During movement of recently irradiated fuel assemblies within the containment and during movement of fuel assemblies over recently irradiated fuel assemblies within the containment.

New ITS Unit 2 only LCO 3.3.6 Containment Purge and Exhaust Isolation Instrumentation

UNIT 1 PAGES

REFUELING OPERATIONS

CONTAINMENT PURGE AND EXHAUST ISOLATION SYSTEM

R1

LIMITING CONDITION FOR OPERATION

3.9.9 The Containment Purge and Exhaust isolation system shall be OPERABLE.

APPLICABILITY: During movement of recently irradiated fuel assemblies within the containment, and

During movement of fuel assemblies over recently irradiated fuel assemblies within the containment.

ACTION:

With the Containment Purge and Exhaust isolation system inoperable, close each of the purge and exhaust penetrations providing direct access from the containment atmosphere to the outside atmosphere. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.9 The Containment Purge and Exhaust isolation system shall be demonstrated OPERABLE at least once per 7 days by verifying that containment Purge and Exhaust isolation occurs on manual initiation and on a high-high radiation signal from each of the containment radiation monitoring instrumentation channels and the isolation time of each system isolation valve is within limits.

Unit 1 Licensing Requirements Manual (LRM)

UNIT 1 PAGE

New Unit 2 only ITS 3.3.6 Containment Purge and Exhaust Isolation Instrumentation



~~3/4.3.3 MONITORING INSTRUMENTATION~~

R1

~~RADIATION MONITORING~~

~~LIMITING CONDITION FOR OPERATION~~

~~3.3.3.1 The radiation monitoring instrumentation channels shown in Table 3.3-6 shall be OPERABLE with their alarm/trip setpoints within the specified limits.~~

~~APPLICABILITY: As shown in Table 3.3-6.~~

~~ACTION:~~

~~a. With a radiation monitoring channel alarm/trip setpoint exceeding the value shown in Table 3.3-6, adjust the setpoint to within the limit within 4 hours or declare the channel inoperable.~~

~~b. With one or more radiation monitoring channels inoperable, take the ACTION shown in Table 3.3-6.~~

~~c. The provisions of Specification 3.0.3 are not applicable.~~

~~SURVEILLANCE REQUIREMENTS~~

~~4.3.3.1 Each radiation monitoring instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the modes and at the frequencies shown in Table 4.3-3.~~

**Unit 1 requirements for the Containment Purge and Exhaust Radiation Monitors are Relocated to the Unit 1 Licensing Requirements Manual (LRM).**

New Unit 2 ITS 3.3.6 Containment Purge and Exhaust Isolation Instrumentation

UNIT 1 PAGE

A1

TABLE 3.3-6

RADIATION MONITORING INSTRUMENTATION

Draft Page From Unit 1 LAR # 314

| INSTRUMENT | MINIMUM CHANNELS OPERABLE | APPLICABLE MODES | SETPOINT(3) | MEASUREMENT RANGE | ACTION |
|---|---|---|---|---|---|
| 1. AREA MONITORS | | | | | |
| a. Deleted | | | | | |
| b. Containment | | | | | |
| i. Purge & Exhaust Isolation (RMVS 104 A & B) | 2 | (2) | $\leq 1.6 \times 10^3$ cpm | $10 - 10^6$ cpm | 22 |
| c. Control Room Isolation (RM-RM-218 A & B) | 2 | 1,2,3,4 and (4) | $\leq .47$ mR/hr | $10^{-2} - 10^3$ mR/hr | 41 |
| 2. PROCESS MONITORS | | | | | |
| a. Containment | | | | | |
| ii. Particulate Activity RCS Leakage Detection (RM 215A) | 1 | 1,2,3 & 4 | N/A | $10 - 10^6$ cpm | 20 |
| b. Deleted | | | | | |

R1

Unit 1 Licensing Requirements Manual (LRM)

Note: These portions of the requirements are addressed in ITS 3.4.15, RCS Leakage Detection Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.4.15.



**Note: These portions of the requirements are addressed in ITS 3.3.7, Control Room Emergency Ventilation System (CREVS) Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.3.7.**

UNIT 1 PAGE

Draft Page From Unit 1 LAR #s 314 & 325

New Unit 2 ITS 3.3.6 Containment Purge and Exhaust Isolation Instrumentation

TABLE 3.3-6 (Continued)

Unit 1 Licensing Requirements Manual (LRM)

TABLE NOTATIONS

~~(1) (Not used).~~

(2) During movement of recently irradiated fuel assemblies within the containment and during movement of fuel assemblies over recently irradiated fuel assemblies within the containment.

R1

*

(3) Above background.

(4) ~~During movement of recently irradiated fuel assemblies and during movement of fuel assemblies over recently irradiated fuel assemblies.~~

ACTION STATEMENTS

**

~~ACTION 20 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.6.1.~~

~~ACTION 21 This Action is not used.~~

R1

ACTION 22 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.9.9.

~~ACTION 35 This Action is not used.~~

*

~~ACTION 41 - a) With the number of Unit 1 OPERABLE channels one less than the Minimum Channels OPERABLE requirement:~~

~~1. Verify the respective Unit 2 control room radiation monitor train is OPERABLE within 1 hour and at least once per 31 days.~~

*** Note: These portions of the requirements are addressed in ITS 3.3.7, Control Room Emergency Ventilation System (CREVS) Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.3.7.**

** Note: These portions of the requirements are addressed in ITS 3.4.15, RCS Leakage Detection Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.4.15.

TABLE 3.3-6 (Continued)

UNIT 1 PAGE

ACTION STATEMENTS

ACTION 41 (Continued)

2. With the respective Unit 2 control room radiation monitor train inoperable, suspend all operations involving movement of irradiated fuel assemblies and movement of fuel assemblies over irradiated fuel assemblies within 1 hour and restore the Unit 1 control room radiation monitor to OPERABLE status within 7 days or isolate the control room from the outside atmosphere by closing all series air intake and exhaust isolation dampers, unless the respective Unit 2 control room radiation monitor train is restored to OPERABLE status within 7 days.

b) With no Unit 1 control room radiation monitors OPERABLE:

**Note: These portions of the requirements are addressed in ITS 3.3.7, Control Room Emergency Ventilation System (CREVS) Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.3.7.**

2. With either Unit 2 control room radiation monitor inoperable, suspend all operations involving movement of irradiated fuel assemblies and movement of fuel assemblies over irradiated fuel assemblies within 1 hour and restore the respective Unit 1 control room radiation monitor train to OPERABLE status within 7 days or isolate the control room from the outside atmosphere by closing all series air intake and exhaust isolation dampers, unless the respective Unit 2 control room radiation monitor train is restored to OPERABLE status within 7 days.

3. With no Unit 2 control room radiation monitors OPERABLE, immediately isolate the combined control room by closing all series air intake and exhaust isolation dampers and be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

**New Unit 2 ITS 3.3.6 Containment Purge and Exhaust Isolation Instrumentation**

**Draft Page From Unit 1 LAR # 314**

**UNIT 1 PAGE**

TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

**R1**

**Unit 1 Licensing Requirements Manual (LRM)**

| INSTRUMENT | CHANNEL CHECK | CHANNEL CALIBRATION | CHANNEL FUNCTIONAL TEST | MODES IN WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|
| 1. AREA MONITORS | | | | |
| ~~a. Deleted~~ | | | | |
| b. Containment | | | | |
| i. Purge & Exhaust Isolation (RMVS 104 A & B) | S | R | M | ** |
| c. Control Room Isolation (~~RM-RM-218 A & B~~) | ~~S~~ | R | M### | 1,2,3,4, and ## |
| 2. ~~PROCESS~~ MONITORS | | | | |
| a. ~~Containment~~ | | | | |
| ii. ~~Particulate~~ Activity RCS Leakage Detection (RM 215A) | S | R# | M | 1,2,3 & 4 |
| ~~b. Deleted~~ | | | | |

Note: These portions of the requirements are addressed in ITS 3.4.15, RCS Leakage Detection Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.4.15.

**R1**

**Unit 1 Licensing Requirements Manual (LRM)**

** During movement of recently irradiated fuel assemblies within the containment and during movement of fuel assemblies over recently irradiated fuel assemblies within the containment.

\# Surveillance interval may be extended to the upcoming ~~refueling outage~~ if the interval between ~~refueling~~ outages is greater than 18 months.

\## ~~During movement of~~ irradiated fuel assemblies and during movement ~~of fuel assemblies~~ over irradiated fuel assemblies.

\### ~~Control Room intake~~ and exhaust isolation dampers are not actuated.



**Note: These portions of the requirements are addressed in ITS 3.3.7, Control Room Emergency Ventilation System (CREVS) Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.3.7.**

**New ITS 3.3.7 Control Room Emergency Ventilation System (CREVS) Actuation Instrumentation**

INSTRUMENTATION

~~3/4.3.3 MONITORING INSTRUMENTATION~~

A1

The Control Room Emergency Ventilation System (CREVS) actuation instrumentation for each Function in Table 3.3.7-1 shall be OPERABLE.

~~RADIATION MONITORING~~

LIMITING CONDITION FOR OPERATION

~~3.3.3.1 The radiation monitoring instrumentation channels shown in Table 3.3-6 shall be OPERABLE with their alarm/trip setpoints within the specified limits.~~

A2

APPLICABILITY: ~~As shown in Table 3.3-6.~~ According to Table 3.3.7-1.

Action Note: Separate Condition entry is allowed for each Function.

A5

ACTION:

M1

~~a. With a radiation monitoring channel alarm/trip setpoint exceeding the value shown in Table 3.3-6, adjust the setpoint to within the limit within 4 hours or declare the channel inoperable.~~

A3

~~b. With one or more radiation monitoring channels inoperable, take the ACTION shown in Table 3.3-6.~~

A4

~~c. The provisions of Specification 3.0.3 are not applicable.~~

SURVEILLANCE REQUIREMENTS

~~4.3.3.1 Each radiation monitoring instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the modes and at the frequencies shown in Table 4.3-3.~~

R1

Control room radiation monitor requirements for Modes 1-4 to LRM

Refer to Table 3.3.7-1 to determine which SRs apply for each CREVS Actuation Function.

A6

New ITS 3.3.7 Control Room Emergency Ventilation System (CREVS) Actuation Instrumentation

Draft Page From Unit 2 LAR # 187

3.3.7-1

TABLE ~~3.3-6~~

~~RADIATION MONITORING INSTRUMENTATION~~

Required

A7

| INSTRUMENT | ~~MINIMUM~~ CHANNELS ~~OPERABLE~~ | APPLICABLE MODES | SETPOINT (3) | MEASUREMENT RANGE | ACTION |
|---|---|---|---|---|---|
| 1. AREA MONITORS | | | | | |
| a. Deleted | | | | | |
| b. Deleted | | | | | |
| c. Control Room Area (2RMC-RQ201 & 202) | 2 | 1,2,3,4, and (4) | ≤ 0.476 mR/hr | $10^{-2}$ to $10^{3}$ mR/hr | 46,47 |
| 2. PROCESS MONITORS | | | | | |
| a. Containment | | | | | |
| i. Gaseous Activity (Xe-133) | 1 | 1,2,3 & 4 | N/A | $10^{-6}$ to $10^{-1}$ µCi/cc | 20 |
| ii. Particulate Activity (I-131) RCS Leakage Detection (2RMR-RQ303A) | 1 | 1,2,3 & 4 | N/A | $10^{-10}$ to $10^{-5}$ µCi/cc | 20 |
| ~~b. Deleted~~ | | | | | |

R1 LRM

ITS Table 3.3.7-1

ITS 3.3.7 Bases

LA1

ITS Table 3.3.7-1

ITS 3.3.7 Bases

ITS 3.3.7 Actions A, B, and D

LA1

Note: These portions of the requirements are addressed in ITS 3.4.15, RCS Leakage Detection Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.4.15.

New ITS 3.3.7 Control Room Emergency Ventilation System (CREVS) Actuation Instrumentation

~~TABLE 3.3-6 (Continued)~~

~~TABLE NOTATIONS~~

~~(1) Not used.~~

~~(2) Not used.~~

ITS Table 3.3.7-1

~~(3)~~ Above background.

(a)

~~(4)~~ During movement of recently irradiated fuel assemblies and during movement of fuel assemblies over recently irradiated fuel assemblies.

R1

(5) During ~~movement~~ of recently irradiated fuel ~~assemblies~~ within the containment and ~~during movement~~ of fuel assemblies over recently ~~irradiated~~ fuel assemblies within ~~the containment~~.

For Modes 1-4 only

ACTION STATEMENTS

ACTION 20 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.6.1.

~~ACTION 21 - This Action is not used.~~

ACTION 22 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.9.9.

~~ACTION 35 - This Action is not used.~~

**Note: These portions of the requirements are addressed in ITS 3.3.6, Containment Purge and Exhaust Isolation Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.3.6.**

**Note: These portions of the requirements are addressed in ITS 3.4.15, RCS Leakage Detection Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.4.15.**

**New ITS 3.3.7 Control Room Emergency Ventilation System (CREVS) Actuation Instrumentation**

~~TABLE 3.3-6 (Continued)~~

R1 — For Modes 1-4 only

ACTION STATEMENTS (Continued)

~~ACTION 46~~ - With the number of OPERABLE channels one less than required by the Minimum Channels OPERABLE requirement, either restore the inoperable channel to OPERABLE status within 7 days or close the control room series normal air intake and exhaust isolation dampers.

~~ACTION 47~~ - With no OPERABLE channels either restore one inoperable channel to OPERABLE status within 1 hour or close the control room series normal air intake and exhaust isolation dampers.

M2

ITS 3.3.7 Action Condition A
One or more Functions with one channel or train inoperable. Place one CREVS train in emergency pressurization mode in 7 days.

M3

ITS 3.3.7 Action Condition B
One or more Functions with two channels or two trains inoperable. Place one CREVS train in the emergency pressurization mode immediately. AND Enter applicable Conditions and Required Actions of LCO 3.7.10, "CREVS", for one CREVS train made inoperable by inoperable CREVS actuation instrumentation immediately.

M4

Insert ITS 3.3.7 Action Condition C
Required Action and associated Completion Time for Condition A or B not met in MODE 1, 2, 3, or 4. Be in MODE 3 in 6 hours. AND Be in MODE 5 in 36 hours.

Insert ITS 3.3.7 Action Condition D
Required Action and associated Completion Time for Condition A or B not met during movement of recently irradiated fuel assemblies, or during movement of fuel assemblies over recently irradiated fuel assemblies. Suspend movement of recently irradiated fuel assemblies immediately. AND Suspend movement of fuel assemblies over recently irradiated fuel assemblies immediately.

INSERT CREVS Manual Initiation Function Requirements — M5

INSERT Containment Isolation – Phase B signal – Refer to LCO 3.3.2, ESFAS Instrumentation," Function 3.b for all initiation functions and requirements. — M6

New ITS 3.3.7 Control Room Emergency Ventilation System (CREVS) Actuation Instrumentation

Draft Page From Unit 2
LAR # 187

ITS Table 3.3.7-1 ~~TABLE 4.3-3~~

~~RADIATION MONITORING INSTRUMENTATION~~ SURVEILLANCE REQUIREMENTS

A8

Channel Operational Test

| INSTRUMENT | CHANNEL CHECK | CHANNEL CALIBRATION | ~~CHANNEL FUNCTIONAL TEST~~ | MODES IN WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|
| 1. AREA MONITORS | | | | |
| ~~a. Deleted~~ | | | | |
| ~~b. Deleted~~ | | | | |
| c. ~~Control Room Area~~ (2RMC-RQ201 & 202) | ~~S~~ SR 3.3.7.1 | ~~R~~ SR 3.3.7.4 | ~~M~~ Q SR 3.3.7.2 | ~~1, 2, 3, 4,~~ and ## |
| 2. PROCESS MONITORS | | | | |
| a. Containment | | | | |
| ~~i. Gaseous Activity RCS Leakage Detection (2RMR-RQ303B)~~ | ~~S~~ | ~~R#~~ | ~~M~~ | ~~1, 2, 3 & 4~~ |
| ~~ii. Particulate Activity RCS Leakage Detection (2RMR-RQ303A)~~ | ~~S~~ | ~~R#~~ | ~~M~~ | ~~1, 2, 3 & 4~~ |
| b. Deleted | | | | |

LA1 ITS 3.3.7 Bases

R1

L1

R1 LRM

ITS Table 3.3.7-1

M7 INSERT SR 3.3.7.3 TADOT every 18 months for Manual Actuation Instrumentation

~~# Surveillance interval may be extended to the upcoming refueling outage if the interval between refueling outages is greater than 18 months.~~

## During movement of recently irradiated fuel assemblies and during movement of fuel assemblies over recently irradiated fuel assemblies.



Note: These portions of the requirements are addressed in ITS 3.4.15, RCS Leakage Detection Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.4.15.

## MANUAL INITIATION FUNCTION INSERT FROM ITS TABLE 3.3.7-1

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | SURVEILLANCE REQUIREMENTS | TRIP SETPOINT |
|---|---|---|---|---|
| 1. Manual | 1, 2, 3, 4, (a) | 2 Trains | SR 3.3.7.3 | NA |

(a) During movement of recently irradiated fuel assemblies, or during movement of fuel assemblies over recently irradiated fuel assemblies

New ITS 3.3.7 Control Room Emergency Ventilation System (CREVS) Actuation Instrumentation

Draft Page From Unit 1 LAR # 314

UNIT 1 PAGES

~~TABLE 3.3-6~~

~~RADIATION MONITORING INSTRUMENTATION~~

| INSTRUMENT | ~~MINIMUM CHANNELS OPERABLE~~ | ~~APPLICABLE MODES~~ | ~~SETPOINT (3)~~ | ~~MEASUREMENT RANGE~~ | ACTION |
|---|---|---|---|---|---|
| 1. AREA MONITORS | | | | | |
| ~~a. Deleted~~ | | | | | |
| ~~b. Containment~~ | | | | | |
| ~~i. Purge & Exhaust Isolation (RMVS 104 A & B)~~ | ~~2~~ | ~~(2)~~ | ~~≤ 1.6 x $10^3$ cpm~~ | ~~10 - $10^6$ cpm~~ | ~~22~~ |
| c. Control Room Isolation (RM-RM-218 A & B) | 2 | 1,2,3,4 and (4) | ≤ .47 mR/hr | $10^{-2}$ - $10^3$ mR/hr | 41 |
| 2. PROCESS MONITORS | | | | | |
| ~~a. Containment~~ | | | | | |
| ~~i. Gaseous Activity RCS Leakage Detection~~ | ~~1~~ | ~~1,2,3 & 4~~ | ~~N/A~~ | ~~10 - $10^6$ cpm~~ | ~~20~~ |
| ~~ii ... RCS Leakage Detection (RM 215A)~~ | | | | ~~... h~~ | ~~20~~ |
| b. Deleted | | | | | |

Changes to these Unit 1 requirements are addressed in the corresponding Unit 2 markup

Note: These portions of the requirements are addressed in ITS 3.3.6, Containment Purge and Exhaust Isolation Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.3.6.

ITS 3.3.7 Actions A, B, and D

Changes to these Unit 1 requirements are addressed in the corresponding Unit 2 markup

ITS 3.3.7 Bases

LA1

Note: These portions of the requirements are addressed in ITS 3.4.15, RCS Leakage Detection Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.4.15.

New ITS 3.3.7 Control Room Emergency Ventilation System (CREVS) Actuation Instrumentation

Draft Page From Unit 1 LAR #s 314 & 325

UNIT 1 PAGE

~~TABLE 3.3-6 (Continued)~~

**Note: These portions of the requirements are addressed in ITS 3.3.6, Containment Purge and Exhaust Isolation Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.3.6.**

~~(1) (Not used)~~

(2) During movement of recently irradiated fuel assemblies within the containment and during movement of fuel assemblies over recently irradiated fuel assemblies within the containment.

~~(3) Above background.~~

~~(4)~~ During movement of recently irradiated fuel assemblies and during movement of fuel assemblies over recently irradiated fuel assemblies.

ITS 3.3.7 Applicability

ACTION STATEMENTS

ACTION 20 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.6.1.

~~ACTION 21 - This Action is not used.~~

ACTION 22 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.9.9.

~~ACTION 35 - This Action is not used.~~

~~ACTION 41~~ - ~~a)~~ With the number of Unit 1 OPERABLE channels one less than the Minimum Channels OPERABLE requirement:

1. Verify the respective Unit 2 control room radiation monitor train is OPERABLE within 1 hour and at least once per 31 days.

Action Condition A

For Fuel Movement

R1

For Modes 1-4 only

M8

**Note: These portions of the requirements are addressed in ITS 3.4.15, RCS Leakage Detection Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.4.15.**

UNIT 1 PAGE

~~TABLE 3.3-6 (Continued)~~

Draft Page From Unit 1 LAR # 314

~~ACTION STATEMENTS~~

ACTION 41 (Continued)

M9

L3 7 days

M8

For Fuel Movement

Action Condition A & D

~~2.~~ ~~With the respective Unit 2 control room radiation monitor train inoperable, suspend all operations involving movement of recently irradiated fuel assemblies and movement of fuel assemblies over recently irradiated fuel assemblies within 1 hour and restore the Unit 1 control room radiation monitor to OPERABLE status within 7 days or isolate the control room from the outside atmosphere by closing all series air intake and exhaust isolation dampers, unless the respective Unit 2 control room radiation monitor train is restored to OPERABLE status within 7 days.~~

For Modes 1-4 only

R1

~~b)~~ ~~With no Unit 1 control room radiation monitors OPERABLE:~~

L3

For Fuel Movement

~~1. Verify both Unit 2 control room radiation monitors are OPERABLE within 1 hour and at least once per 31 days.~~

7 days

Action Condition A & D

~~2. With either Unit 2 control room radiation monitor inoperable, suspend all operations involving movement of recently irradiated fuel assemblies and movement of fuel assemblies over recently irradiated fuel assemblies within 1 hour and restore the respective Unit 1 control room radiation monitor train to OPERABLE status within 7 days or isolate the control room from the outside atmosphere by closing all series air intake and exhaust isolation dampers, unless the respective Unit 2 control room radiation monitor train is restored to OPERABLE status within 7 days.~~

M9

M8

For Fuel Movement

Action Condition B & C

~~3.~~ ~~With no Unit 2 control room radiation monitors OPERABLE, immediately isolate the combined control room by closing all series air intake and exhaust isolation dampers and be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.~~

R1

For Modes 1-4 only

M9

M8

New ITS 3.3.7 Control Room Emergency Ventilation System (CREVS) Actuation Instrumentation

~~TABLE 4.3-3~~

Draft Page From Unit 1 LAR # 314

UNIT 1 PAGE

~~RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS~~

Note: These portions of the requirements are addressed in ITS 3.3.6, Containment Purge and Exhaust Isolation Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.3.6.

| INSTRUMENT | CHANNEL CHECK | CHANNEL CALIBRATION | CHANNEL FUNCTIONAL TEST | MODES IN WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|
| 1. AREA MONITORS | | | | |
| ~~a. Deleted~~ | | | | |
| b. Containment | | | | |
| i. Purge & Exhaust Isolation (RMVS 104 A & B) | S | R | M | ** |
| c. Control Room Isolation (RM-RM-218 A & B) | S | R | M### | 1,2,3,4, and ## |
| 2. PROCESS MONITORS | | | | |
| a. Containment | | | | |
| i. Gaseous Activity RCS Leakage Detection (RM 215B) | S | R# | M | 1,2,3 & 4 |
| ii. Particulate Activity RCS Leakage Detection (RM 215A) | S | R# | M | 1,2,3 & 4 |
| ~~b. Deleted~~ | | | | |

Note: These portions of the requirements are addressed in ITS 3.4.15, RCS Leakage Detection Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.4.15.

** During movement of recently irradiated fuel assemblies within the containment and during movement of fuel assemblies over recently irradiated fuel assemblies within the containment.

\# Surveillance interval may be extended to the upcoming refueling outage if the interval between refueling outages is greater than 18 months.

\## During movement of recently irradiated fuel assemblies and during movement of fuel assemblies over recently irradiated fuel assemblies.

~~### Control Room intake and exhaust isolation dampers are not actuated.~~ A9



Changes to these Unit 1 requirements are addressed in the corresponding Unit 2 markup

Note: These portions of the requirements are addressed in ITS 3.3.6, Containment Purge and Exhaust Isolation Instrumentation consistent with the location of this information in the ISTS. All changes to these portions of the requirements will be discussed and documented in the markups and DOCs associated with ITS 3.3.6.

## INSERT ITS 3.3.7 Actions

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more Functions with one channel or train inoperable. | A.1 Place one CREVS train in emergency pressurization mode. | 7 days |
| B. One or more Functions with two channels or two trains inoperable. | B.1 Place one CREVS train in emergency pressurization mode. | Immediately |
| | AND | |
| | B.2 Enter applicable Conditions and Required Actions of LCO 3.7.10, "CREVS", for one CREVS train made inoperable by inoperable CREVS actuation instrumentation. | Immediately |
| C. Required Action and associated Completion Time for Condition A or B not met in MODE 1, 2, 3, or 4. | C.1 Be in MODE 3. | 6 hours |
| | AND | |
| | C.2 Be in MODE 5. | 36 hours |
| D. Required Action and associated Completion Time for Condition A or B not met during movement of recently irradiated fuel assemblies or movement of fuel assemblies over recently irradiated fuel assemblies. | D.1 Suspend movement of recently irradiated fuel assemblies. | Immediately |
| | AND | |
| | D.2 Suspend movement of fuel assemblies over recently irradiated fuel assemblies. | Immediately |

## New ITS 3.3.8 Boron Dilution Detection Instrumentation

A1

~~TABLE 3.3-1~~
~~REACTOR TRIP SYSTEM INSTRUMENTATION~~

| FUNCTIONAL UNIT | TOTAL NO. OF CHANNELS | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | ALLOWABLE VALUE | APPLICABLE MODES | ACTION |
|---|---|---|---|---|---|---|
| ~~1. Manual Reactor Trip~~ | ~~2~~ | ~~1~~ | ~~2~~ | ~~N.A.~~ | ~~1, 2, 3$^{(3)}$, 4$^{(3)}$ and 5$^{(3)}$~~ | ~~12~~ |
| ~~2. Power Range, Neutron Flux~~ | | | | | | |
| ~~3. Power Range, Neutron Flux High Positive Rate~~ | ~~4~~ | ~~2~~ | ~~3~~ | ~~≤ 5.5% of RTP* with a time constant ≥ 2 seconds~~ | ~~1, 2~~ | ~~2~~ |
| ~~4. Power Range, Neutron Flux High Negative Rate~~ | ~~4~~ | ~~2~~ | ~~3~~ | ~~≤ 5.5% of RTP* with a time constant ≥ 2 seconds~~ | ~~1,2~~ | ~~2~~ |
| ~~5. Intermediate Range, Neutron Flux~~ | ~~2~~ | ~~1~~ | ~~2~~ | ~~≤ 27.9% of RTP*~~ | ~~1$^{(1)}$, 2, 3$^{(3)}$, 4$^{(3)}$ and 5$^{(3)}$~~ | ~~3~~ |
| 6. Source Range$^{(8)}$, Neutron Flux | | | | | | |
| ~~a. With Rod Withdrawal Capability~~ | ~~2~~ | ~~1~~ | ~~2~~ | ~~≤ 1.3 x 10$^{5}$ cps~~ | ~~2$^{(2)}$, 3$^{(3)}$, 4$^{(3)}$ and 5$^{(3)}$~~ | ~~4~~ |
| ~~b.~~ With All Rods Fully Inserted and Without Rod Withdrawal Capability | 2 | ~~0~~ | 1 | N.A. | 3$^{(9)}$, 4$^{(9)}$, and 5$^{(9)}$ | 5 |

Note: Changes to these requirements are addressed in the documentation and markups associated with the Reactor Trip System Technical Specification (ITS 3.3.1). These requirements are not part of ITS 3.3.8.

LA1 A2 A3 A4 LA2

ITS 3.3.8 Condition A

ITS 3.3.8 Bases

ITS 3.3.8 Applicability

ITS 3.3.8 LCO

ITS 3.3.8 Applicability

ITS 3.3.8 Bases

~~* = RATED THERMAL POWER~~

(8) Alternate detectors may only be used for monitoring purposes Without Rod Withdrawal Capability ~~until detector functions are modified to permit equivalent alarm and trip functions.~~



Note: Changes to these requirements are addressed in the documentation and markups associated with the Reactor Trip System Technical Specification (ITS 3.3.1). These requirements are not part of ITS 3.3.8.

New ITS 3.3.8 Boron Dilution Detection Instrumentation

TABLE 3.3-1 (Continued)

TABLE NOTATION

(1

(2

Note: Changes to these requirements are addressed in the documentation and markups associated with the Reactor Trip System Technical Specification (ITS 3.3.1). These requirements are not part of ITS 3.3.8.

(3) With the reactor trip system breakers in the closed position and the control rod drive system capable of rod withdrawal.

(9) In this condition, source range Function does not provide reactor trip but does provide indication.

ITS 3.3.8 Bases

LA3

(A): OVERTEMPERATURE $\Delta T$

The Overtemperature $\Delta T$ Function Allowable Value shall not exceed the following nominal trip setpoint by more than 0.5% $\Delta T$ span for the $\Delta T$ channel, 0.5% $\Delta T$ span for the $T_{avg}$ channel, 0.5% $\Delta T$ span for the Pressurizer Pressure channel and 0.5% $\Delta T$ span for the f($\Delta I$) channel.

$$\Delta T \frac{(1+\tau_1 S)}{(1+\tau_2 S)}\left(\frac{1}{1+\tau_3 S}\right) \le \Delta T_0 \left\{K_1 - K_2 \frac{(1+\tau_4 S)}{(1+\tau_5 S)}\left[T\left(\frac{1}{1+\tau_6 S}\right) - T'\right] + K_3(P-P') - f_1(\Delta I)\right\}$$

where: $\Delta T$ is measured RCS $\Delta T$, °F.

$\frac{1+\tau_1 S}{1+\tau_2 S}$ is the function generated by the lead-lag compensator on measured $\Delta T$.

$\tau_1, \tau_2$ are the time constants utilized in the lead-lag

Note: Changes to these requirements are addressed in the documentation and markups associated with the Reactor Trip System Technical Specification (ITS 3.3.1). These requirements are not part of ITS 3.3.8.

$\tau_3$ Is the time constant utilized in the lag compensator for $\Delta T$ specified in the COLR.

$\Delta T_0$ Is the loop specific indicated $\Delta T$ at RATED THERMAL POWER, °F.

$K_1$ is specified in the COLR.

$K_2$ is specified in the COLR.

$\frac{1+\tau_4 S}{1+\tau_5 S}$ is the function generated by the lead-lag compensator for $T_{avg}$.

$\tau_4, \tau_5$ are the time constants utilized in lead-lag compensator for $T_{avg}$ specified in the COLR.

New ITS 3.3.8 Boron Dilution Detection Instrumentation

TABLE 3.3-1 (Continued)

ACTION 3 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. Below P-6, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 setpoint.

b. Above P-6 but below 5 percent of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5

Note: Changes to these requirements are addressed in the documentation and markups associated with the Reactor Trip System Technical Specification (ITS 3.3.1). These requirements are not part of ITS 3.3.8.

ACTION 4 - a. MODE 2 (Below P-6); with one source range neutron flux channel inoperable, immediately suspend operations involving positive reactivity additions.

b. MODE 3, 4 and 5; with one source range neutron flux channel inoperable, restore the inoperable channel to OPERABLE status within 48 hours or open the reactor trip breakers within the next hour.

c. MODE 2 ... with two source range ... inoperable, immediately open the reactor trip breakers.

A5

A.2.1 Restore inoperable channel to OPERABLE status within 1 hour.
OR

A6

Required channel inoperable.

~~ACTION 5~~ - With the number ~~of OPERABLE channels one less~~ than the Minimum ~~Channels OPERABLE~~ requirement:

~~a.~~ Suspend operations involving positive reactivity additions,(7) and

Immediately

M1

ITS 3.3.8 Condition A

~~b.~~ ~~Close unborated water source isolation valves (2CHS-91, 2CHS-96 and 2CHS-138) or (2CHS-37 and 2CHS-828)~~ within 1 hour, and

ITS 3.1.8 Bases

LA4

SR 3.1.1.1

A7

~~c.~~ Perform ~~Surveillance Requirement 4.1.1.1.1 or 4.1.1.2, as applicable,~~ within the next hour and at least once per 12 hours thereafter.

~~ACTION 6 - This Action is not used.~~

ITS Required Action A Note

~~(7)~~ Plant ~~cooldown is~~ allowable provided the temperature change is accounted for in the calculated shutdown margin.

temperature changes are

L1



Note: Changes to these requirements are addressed in the documentation and markups associated with the Reactor Trip System Technical Specification (ITS 3.3.1). These requirements are not part of ITS 3.3.8.

New ITS 3.3.8 Boron Dilution Detection Instrumentation

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| Functional Unit | Channel Check | Channel Calibration | Channel Functional Test | Modes in Which Surveillance Required |
|---|---|---|---|---|
| 1. Manual Reactor Trip | N.A. | N.A. | S/U[1], R[10] | 1, 2, 3[14], 4[14], 5[14] |
| 2. Power Range, Neutron Flux | | | | |
| a. High | | | | 1, 2 |
| b. Low | | | | 1[7], 2 |
| 3. Power Ra... High Positive Rate | | | | 1, 2 |
| 4. Power Range, Neutron Flux, High Negative Rate | N.A. | R[6] | Q | 1, 2 |
| 5. Intermediate Range, Neutron Flux | S | R[6] | S/U[1] | 1, 2, 3[14], 4[14], 5[14] |
| 6. Source Range[15], Neutron Flux | | | | |
| a. With Rod Withdrawal Capability | S | R[6] | Q[8] | 2, 3[14], 4[14] and 5[14] |
| ~~b.~~ With All Rods Inserted and Without Rod Withdrawal Capability | S | R[6] | Q[8] | 3, 4 and 5 |
| 7. Overtemperature ΔT | | R[6] | Q | 1, 2 |
| 8. Overpower ΔT | | | Q | 1, 2 |
| 9. Pressurizer Pressure-Low (Above P-7) | S | R | Q | 1, 2 |
| 10. Pressurizer Pressure-High | S | R | Q | 1, 2 |
| 11. Pressurizer Water Level-High (Above P-7) | S | R | Q | 1, 2 |

Note: Changes to these requirements are addressed in the documentation and markups associated with the Reactor Trip System Technical Specification (ITS 3.3.1). These requirements are not part of ITS 3.3.8.

ITS SR 3.3.8.1

ITS SR 3.3.8.2

L2

A8

ITS 3.3.8 Applicability

ITS 3.3.8 Applicability



Note: Changes to these requirements are addressed in the documentation and markups associated with the Reactor Trip System Technical Specification (ITS 3.3.1). These requirements are not part of ITS 3.3.8.

New ITS 3.3.8 Boron Dilution Detection Instrumentation

TABLE 4.3-1 (Continued)

TABLE NOTATION

(1) - If not performed in previous 31 days.

(2 ... R.

**Note: Changes to these requirements are addressed in the documentation and markups associated with the Reactor Trip System Technical Specification (ITS 3.3.1). These requirements are not part of ITS 3.3.8.**

(3 ... compare ... f RATED THERMAL POWER. Recalibrate if absolute difference greater than or equal to 3 percent.

(4) - (Not Used).

(5) - Each train tested every other month on a STAGGERED TEST BASIS.

(6) - Neutron detectors may be excluded from CHANNEL CALIBRATION.

Note in ITS SR 3.3.8.2

~~(7) - Below P-10.~~

(8) - ~~Below P-6, not~~ required to be ~~performed for~~ source range instrumentation ~~prior to entering~~ MODE 3 from MODE 2 until 12 hours after entry into MODE 3.

L2

(9) - (Not Used)

(10) - The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip circuits for the Manual Reactor Trip Function. The test shall also verify the OPERABILITY of the Bypass Breaker trip circuit(s).

... the ... of

**Note: Changes to these requirements are addressed in the documentation and markups associated with the Reactor Trip System Technical Specification (ITS 3.3.1). These requirements are not part of ITS 3.3.8.**

(12) - Local manual shunt trip prior to placing breaker in service.

(13) - Automatic undervoltage trip.

(14) - With the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal.

~~(15)~~ - Surveillance Requirements need not be performed on alternate detectors until connected and required for OPERABILITY.

ITS 3.3.8 Bases

LA5

TABLE 3.3-1 (Continued)

ACTION 3 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. Below P-6, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 setpoint.

b. Above P-6 but below 5 percent of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5 percent of RATED THERMAL POWER.

c. Above 5 percent of RATED THERMAL POWER, POWER OPERATION may

**Changes to this Unit 1 material are addressed in the Unit 2 Markup and DOCs**

ACTION 4 - a. MODE 2 (Below P-6); with one source range neutron flux channel inoperable, immediately suspend operations involving positive reactivity additions.

b. MODE 3, 4 and 5; with one source range neutron flux channel inoperable, restore the inoperable channel to OPERABLE status within 48 hours or open the reactor trip breakers within the next hour.

c. MODE 2 (Below P-6), 3, 4 and 5; with two source range neutron flux channels inoperable, immediately open the reactor trip breakers.

ACTION 5 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement:

a. Suspend operations involving positive reactivity additions,[7] and

LA4

Bases

b. Close unborated water source isolation valve(s) (1CH-90) or (1CH-91 and 1CH-93) within 1 hour, and

Bases

c. Perform Surveillance Requirement 4.1.1.1.1 or 4.1.1.2, as applicable, within the next hour and at least once per 12 hours thereafter.

ACTION 6 - Not Applicable.

**Changes to this Unit 1 material are addressed in the Unit 2 Markup and DOCs**

(7) Plant cooldown is allowable provided the temperature change is accounted for in the calculated shutdown margin.

Misc. Blank Deleted Pages

UNIT 1 PAGE



A1

3/4.3.3.2 (This Specification number is not used.)

Page Deleted

UNIT 1 PAGE

A1

INSTRUMENTATION

3/4.3.3.3 (This Specification number is not used.)

Page Deleted

UNIT 1 PAGE

A1

INSTRUMENTATION

3/4.3.3.4 (This Specification number is not used.)

Page Deleted


(Next page is 3/4 3-44)

UNIT 1 PAGE

A1

INSTRUMENTATION

3/4.3.3.7 (This Specification number is not used.)

Page Deleted

A1



3/4.3.3.2 (This Specification number is not used.)

**Page Deleted**

A1



3/4.3.3.3 (This Specification number is not used.)

**Page Deleted**

A1



3/4.3.3.4 (This Specification number is not used.)

**Page Deleted**



(Next page is 3/4 3-52)

A1



3/4.3.3.6 (This Specification number is not used.)

**Page Deleted**

A1



3/4.3.3.7 (This Specification number is not used.)

**Page Deleted**

# 3.3 B Instrumentation

# DISCUSSION OF CHANGES

# ITS 3.3.3 Post Accident Monitoring (PAM) Instrumentation
# CTS 3.3.3.8 Post Accident Monitoring (PAM) Instrumentation
DISCUSSION OF CHANGE (DOC)

## *Less Restrictive Changes (L)*

None

## *More Restrictive Changes (M)*

None

## *Removed Detail Changes (LA)*

None

## *Administrative Changes (A)*

A.1 In the conversion of the Beaver Valley Power Station current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering or order, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

Due to the large number of such changes, A.1 changes may not always be marked on each CTS page. Marked or unmarked, all A.1 changes are identified by a single annotation of A.1 at the top of the first page of each CTS. These changes include all non-technical modifications of requirements to provide consistency with the ISTS, including all significant format changes made to update the older NUREG-0452 Technical Specification presentation to the ISTS format. This type of change is also associated with the movement of requirements within the Technical Specifications and with changes made to the presentation of Technical Specifications requirements to combine the Unit 1 and 2 Technical Specifications into one document and highlight the differences between the Unit 1 and 2 requirements. These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS requirements.

A.2 CTS Action Statement "a.2" is applicable if the restoration Action a.1 is not met and requires that a report be submitted to the NRC. CTS Action "a.2" defines the content and time limit applicable for the report. The corresponding ITS Action Condition B does not contain the same specific reporting requirements as the CTS. Instead the ITS Action refers to ITS 5.6.5 (Administrative Controls Reporting Requirement) for the details of the required report. The CTS is revised to conform to the ITS. This changes the CTS by moving the specific PAM reporting requirements to the Administrative Controls section of the technical specifications.

The proposed change is acceptable because the CTS and ITS requirements are effectively the same. Although the ITS presents the PAM reporting requirement in the Administrative Controls Section 5.6.5 and references that section in the Actions, the end result (timing and content of the required report) remain the same as the CTS. Therefore, the proposed change only involves the format and presentation of the technical specification requirements and does not introduce a technical change. The proposed change is designated administrative because it does not change the technical requirements of the CTS.

A.3 CTS Action b.2 specifies the applicable action when the restoration action specified in CTS Action b.1 is not met. CTS Action b.2 requires that a report be submitted to the NRC within 7 days. The Action also specifies the content of the required report. The corresponding ITS Action Condition D also requires a report to be submitted to the NRC within 7 days, but refers to ITS Specification 5.6.5 for the content of the report. The ITS Specification is in the reporting requirements specified in the Administrative Controls section of the Technical Specifications. The CTS is revised to conform to the ITS. This changes the CTS by moving the description of the required report contents to the Administrative Controls section of the technical specifications (5.6.5). Note that the time limit for submitting the report in CTS Action b.2 is different than the time limit specified in ITS 5.6.5. Thus, the CTS time limit (7 days) is retained in the corresponding ITS Action Condition D. Only the content of the report is moved to ITS 5.6.5.

The proposed change is acceptable because the CTS and ITS requirements are effectively the same. Although the ITS describes the contents of the required PAM report in Administrative Controls Section 5.6.5 and references that section in the Actions, the end result (time limit and content of the required report) remain the same as the CTS. Therefore, the proposed change only involves the format and presentation of the technical specification requirements and does not introduce a technical change. The proposed change is designated administrative because it does not change the technical requirements of the CTS.

A.4 CTS Surveillance 4.3.3.8.3 specifies a Channel Functional Test be performed every 18 months. A General Note modifies the CTS surveillances and explains that CTS 4.3.3.8.3 is only applicable to the containment isolation valve position indication PAM Function. Corresponding ITS SR 3.3.3.3 specifies that a Trip Actuating Device Operational Test (TADOT) be performed every 18 months and a Note modifies the ITS surveillance such that it is only applicable to the containment isolation valve position indication PAM Function. The CTS is revised to conform to the ITS. This changes the CTS by specifying a TADOT instead of a Channel Functional Test for the containment isolation valve position indication PAM Function.

The defined test term "Channel Functional Test" is not used in the ITS. The ITS utilizes two separate defined test terms in place of the CTS Channel Functional Test. The corresponding ITS defined test terms are the Channel Operational Test (COT) and the TADOT. The revision of the technical specification defined terms is discussed in more detail in Section 1.0 of the technical specifications.

The proposed change is acceptable because it does not result in a change to the required test for the containment isolation valve position indication PAM Function. Both the CTS Channel Functional Test and the ITS TADOT adequately verify the operation of the containment isolation valve position indication PAM Function. As this particular PAM function typically consists of a switch type actuation device, the ITS TADOT better defines the appropriate test to verify the operability of the actuating device. The other ITS define test term (the COT) is suitable for the more complex instrument channels that utilize signal processing and multiple electronic components (i.e., not a simple switch) to derive the necessary indication or actuation. Therefore, the proposed change only serves to refine and clarify the specified test requirements such that they better fit the type of instrumentation being tested. The actual testing continues to adequately verify the containment isolation valve position indication PAM Function operability in a similar manner as before. The proposed change is designated administrative because it does not introduce a technical change to the CTS.

# ITS 3.3.4 Remote Shutdown Instrumentation
# CTS 3.3.3.5 Remote Shutdown Instrumentation
## DISCUSSION OF CHANGE (DOC)

### *Less Restrictive Changes (L)*

L.1 *(Category 4 – Relaxation of Required Action)* Unit 2 only. CTS LCO 3.3.3.5 requires instrumentation channels to be OPERABLE for the remote shutdown panel for various parameters. The Action requires "With the number of OPERABLE remote shutdown monitoring channels less than required by Table 3.3-9, either restore the inoperable channel to OPERABLE status within 7 days, or be in HOT SHUTDOWN within the next 12 hours." ITS LCO 3.3.4 states "The Remote Shutdown System Function shall be OPERABLE. ITS LCO 3.3.4 Action A states "One or more required Functions inoperable, restore required Function to OPERABLE status," with an allowed Completion Time of 30 days. ITS Action B is entered if the Required Action cannot be accomplished within the allowed time. ITS Condition B states "Required Action and associated Completion Time not met." Required Action B.1 requires the unit to be in MODE 3 in 6 hours and MODE 5 in 12 hours. The CTS is revised to conform to the ISTS. This changes the Unit 2 CTS by allowing 30 days instead of 7days for a remote shutdown Function to be inoperable before requiring the unit to shutdown. It should be noted that the BVPS Unit 1 CTS provides a 30 day allowed outage time, so this change does not apply to Unit 1.

The proposed change is acceptable considering that the operability of the Remote Shutdown System instrumentation is not a specific assumption of a design basis accident analysis and the proposed 30-day Completion Time continues to provide a sufficient limit on plant operation if a Remote Shutdown Function is not restored to operable status. As such, the 30-day Completion is acceptable due to the lower safety significance of the Remote Shutdown System instrumentation relative to systems and components necessary to mitigate design basis accidents and considering the low probability of an event occurring within this time that would require the use of the Remote Shutdown System (i.e., control room evacuation). The proposed change provides additional operational flexibility for equipment restoration without significantly affecting the safe operation of the plant. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.2 Not used.

L.3 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS surveillance requirement 4.3.3.5 states "Each remote shutdown monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-6." The CTS Source Range Channel Check requirements on Table 4.3-6 are modified by CTS Note 4 that states "Below P-6." The corresponding ITS LCO SR 3.3.4.1 states "Perform CHANNEL CHECK for each required indication instrumentation channel that is normally energized." ITS Table 3.3.4-1 in the ITS Bases lists the instrumentation channels for which ITS SR

3.3.4.1 applies but does not include any notes modifying the Source Range Instrument requirements. The CTS surveillance requirements are revised to conform to the corresponding ISTS surveillance requirement. This changes the CTS by specifying a CHANNEL CHECK be performed for each required channel only if the channel is normally energized. In addition, the proposed change eliminates the Note modifying the Source Range instrument Channel Check.

The proposed change is acceptable because it is necessary to account for instrumentation that may be de-energized by design when a channel check is required to be performed. Some equipment, such as the source range instrumentation, is designed to be de-energized at power. The performance of a channel check surveillance on de-energized instrumentation would not provide useful information for determining the operability of the affected instrumentation and is therefore, unnecessary to verify the LCO is being met. As such, the ISTS provides the general exception to the channel check surveillance for normally de-energized equipment. The proposed change effectively replaces the similar exception in the CTS (provided by Table 4.3-6 Note 4 for the Source Range Channel Check). The Source Range instrumentation operability requirements are based on when the Source Range is required to be energized (i.e., operable) below P-6. Above P-6, the source range instrumentation is normally de-energized to prevent damage to the detectors. Other nuclear instrumentation is relied on above P-6 to provide power indication. The ISTS surveillance exception for de-energized instruments effectively addresses the operability requirements for the source range instrumentation without the need of CTS Note 4 to modify the Channel Check requirement. As the ISTS implementation of this exception is more general than the specific CTS exception for source range indication and may address other de-energized indication channels, the proposed change is designated less restrictive.

L.4 *(Category 1 – Relaxation of LCO Requirements)* CTS LCO 3.3.3.5 states "The remote shutdown monitoring instrumentation channels shown in Table 3.3-9 shall be OPERABLE with readouts displayed external to the control room." CTS Table 3.3-9 specifies required channels for the Intermediate Range, Source and Intermediate Range Startup Rate and RHR Heat exchanger outlet temperature. CTS Surveillance Requirement 4.3.3.5 specifies the applicable Channel Checks and Channel Calibrations for these Remote Shutdown System instruments. The RHR HX outlet temperature requirements for both units are modified by notes referring to the RCS Section of the TS for operability guidance and surveillance requirements. The corresponding ITS LCO 3.3.4 requirements described in ITS Bases Table 3.3.4-1 does not list the Intermediate Range, Source and Intermediate Startup Rate, or the RHR heat exchanger outlet temperature as required instrument channels. The CTS is revised to conform to the ITS requirements. This changes the CTS by deleting the requirements pertaining to the Intermediate Range indication, Source and Intermediate Range Startup Rate indication and RHR heat exchanger outlet temperature indication (including notes) from the Remote Shutdown System TS.

The proposed change makes the list of required instrumentation more consistent with the Bases for the Remote Shutdown System TS, as described in the applicable ISTS 3.3.4 Bases discussion. As described in the ISTS Bases the purpose of the Remote Shutdown System TS requirements is to assure the indications and controls necessary to safely maintain the plant in Mode 3 from a location outside the control room are available if needed. The CTS Remote Shutdown System requirements include instrumentation that is not necessary for safe operation in Mode 3.

The intermediate range indication and the source and intermediate range startup indication instruments are not necessary to monitor core reactivity in Mode 3. In Mode 3, the reactor is subcritical and changes in core reactivity may be adequately monitored by the source range indication instruments. The proposed change does not revise the CTS requirement for the operability of the source range neutron flux indication on the BVPS Unit 1 and 2 Emergency Shutdown Panels. The requirement for the operability of the source range indication is consistent with the corresponding ISTS Remote Shutdown requirements for monitoring core reactivity. As such, the proposed change is acceptable because it continues to assure core reactivity can be monitored from a location outside the control room to safely maintain the plant in Mode 3.

The proposed change also eliminates the CTS requirements for the RHR heat exchanger outlet temperature indication and associated notes. As discussed previously, the bases for the Remote Shutdown TS requirements is to maintain the plant in Mode 3. The RHR system is not required to safely maintain the plant in Mode 3. The CTS Remote shutdown System requirements have been modified to include the additional controls and indications (i.e., for the AFW system and SG steam dump valves) necessary to safely maintain the plant in Mode 3. Therefore, the CTS RHR indication and associated notes may be eliminated without adversely affecting the Remote Shutdown System capability to maintain the plant in Mode 3. As such, the proposed change is acceptable because it does not affect the capability to safely maintain the plant in Mode 3 and because of the addition of new TS requirements to assure the Remote Shutdown System capability to maintain the plant in Mode 3.

The proposed changes are designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

L.5 Unit 2 only. *(Category 1 – Relaxation of LCO Requirements)* CTS LCO 3.3.3.5 specifies pressurizer pressure as one of the remote shutdown panel indications required operable. The corresponding ISTS requirements in Bases Table 3.3.4-1 specify that either pressurizer pressure or RCS wide range pressure indication be operable. As the Unit 2 emergency shutdown panel includes both pressurizer pressure and RCS wide range pressure, the Unit 2 CTS requirements are revised to conform to the ISTS requirements. Note, the Unit 1 emergency shutdown panel does not include RCS wide range pressure indication. This changes the Unit 2 CTS requirements by providing an option to use either pressure indication to meet the LCO requirements.

The purpose of the remote shutdown requirements is to assure that sufficient instrumentation and controls to safely maintain the unit in Mode 3 from a location outside the control room. The CTS remote shutdown panel requirement for pressurizer pressure indication provides the necessary indication for monitoring and maintaining the RCS pressure within acceptable limits in Mode 3. The proposed change is acceptable because the RCS wide range pressure indication is also available on the remote shutdown panel and provides an adequate indication of system pressure to safely maintain the plant in Mode 3. The proposed change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

## *More Restrictive Changes (M)*

M.1 CTS LCO 3.3.3.5 Actions specify required actions to be conducted within specific times. If the actions cannot be completed within the allowed time, the unit is required "to be in at least HOT SHUTDOWN (i.e., Mode 4) within the next 12 hours." The corresponding Actions of ITS LCO 3.3.4 Condition B state: "Required Action and associated Completion Time not met, be in Mode 3 in 6 hours and Mode 4 in 12 hours." The CTS is revised to conform to the ISTS. This changes the CTS Action by specifying the intermediate requirement that the plant be placed in Mode 3 within 6 hours as well as requiring the plant to be in Mode 4 within 12 hours.

The additional restriction of placing the plant in MODE 3 within 6 hours is acceptable because it assures the plant is shutdown in a timely manner if the requirements of the LCO are not met. The additional restriction is reasonable considering the time allowed to be in Mode 3 (6 hours) is based on operating experience, and allows the plant to reach the required Mode from full power conditions in an orderly manner without challenging unit systems or plant staff. As such, the proposed change provides additional assurance that the plant is operated in a safe manner without significantly increasing risk or placing an undue burden on equipment and plant personnel. Therefore, the proposed change does not adversely affect the safe operation of the plant. This change is designated more restrictive because the ITS specifies an additional requirement that is not contained in the CTS.

M.2 Not used.

M.3 CTS Surveillance Requirement 4.3.3.5 states "Each remote shutdown monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-6." The CTS Table specifies that a Channel Check for AFW Flow Rate be performed only upon a unit startup (S/U). The S/U frequency for this surveillance is modified by a note that states "Channel check to be performed in conjunction with Surveillance Requirement 4.7.1.2.7 following an extended plant outage." CTS 4.7.1.2.7 verifies AFW flow to the SGs after the Unit has been in Mode 5 or 6 for more than 30 days. The CTS surveillance note results in a Channel Check of the Remote Shutdown System AFW flow indication normally being performed once per refueling outage (or every 18 months). The corresponding ITS SR 3.3.4.1 requires the performance of a CHANNEL CHECK every month for each required instrumentation channel that is normally energized. The CTS is revised to conform to the ISTS surveillance requirement. This changes the CTS by replacing the requirement to perform an AFW flow channel check once per unit startup following an extended outage with the requirement for a channel check to be performed every month.

The CTS surveillance results in the required Channel Check for this particular Remote Shutdown System indication normally being performed on the same frequency as the required Channel Calibration (i.e., once per 18 months when the

AFW system may be in service feeding the SGs after an extended outage). As such, the CTS frequency for this Channel Check is inconsistent with the purpose of a Channel Check as stated in the ISTS Bases (i.e., "...it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION"). The proposed change is acceptable because it results in more frequent channel checks being performed on this flow indication to provide additional verification of equipment operability between Channel Calibrations. The performance of a Channel Check surveillance does not require a specific value be obtained for the process variable being monitored. A Channel Check may be performed on energized instrumentation that indicates zero. The results of a surveillance performed on instrumentation indicating zero satisfy the requirements of the Channel Check as well as surveillances performed on instrumentation indicating a value greater than zero. The Channel Check surveillance only requires that instrument channels monitoring the same parameter should read approximately the same value. As such, the proposed change provides additional assurance that the Remote Shutdown System AFW flow indication remains operable between Channel Calibrations. The proposed change is designated more restrictive because the ITS specifies additional surveillances be performed that are not required in the CTS.

M.4 CTS 3.3.3.5 only contains requirements for monitoring instrumentation. CTS surveillance requirement 4.3.3.5 states "Each remote shutdown monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the Channel Check and Channel Calibration operations at the frequencies shown in Table 4.3-6." The CTS requirements only specify a Channel Check and Channel Calibration for the specified monitoring channels. The corresponding ISTS 3.3.4 includes requirements for control and transfer switches as well as monitoring instrumentation. ITS SR 3.3.4.3 provides requirements to verify the operability of the control and transfer switches. ITS SR 3.3.4.3 requires that each specified control circuit and transfer switch be verified capable of performing the intended function. The ITS SR must be performed every 36 months. The CTS is revised to conform to the ITS. This changes the CTS by adding specific control and transfer Functions to the Remote Shutdown System specification along with a surveillance requirement to verify the transfer and control switches can perform their intended function.

The proposed change is acceptable because the new requirements for the control functions provide additional assurance the Remote Shutdown System remains capable of providing the controls and indications necessary to safely maintain the unit in Mode 3 from a location outside the control room area.

Core reactivity is monitored by a Source Range channel that provides an indication changes to reactivity when shutdown. The boric acid pump control Function provides a means of inserting negative reactivity with the introduction of boric acid into the RCS via the charging system. Positive reactivity insertion capabilities are not required to safely maintain the plant in Mode 3.

RCS pressure control requires a pressurizer pressure or RCS wide range pressure indication and pressurizer heater control to maintain sufficient RCS pressure. If an overpressure condition were to occur, pressurizer code safety valves ensure RCS integrity is maintained without manual operator action.

The removal of decay heat from the RCS by the steam generators provides for fuel integrity. The removal of decay heat limits the fuel temperature and degradation of the fuel cladding. Thereby maintaining an acceptable core cooling geometry and fuel cladding boundary. Instrumentation channels providing RCS hot and cold leg temperature and steam generator pressure and level help to monitor decay heat removal process. AFW flow indication monitors makeup to the SG inventory. An atmospheric dump valve controls energy removed from the steam generator and thereby the removal of core decay heat. AFW pump and flow controls provide the necessary means to replenish steam generator inventory to ensure long term cooling of the RCS in conjunction with the atmospheric dump valve.

RCS inventory control requires pressurizer level indication and control functions for a charging pump and charging flow, as well as letdown flow control. These functions also provide the necessary requirements along with pressurizer heaters to ensure that the RCS can be maintained in a pressurized water state. Charging pump and flow controls also provides the necessary mechanism of boron flow path from the boric acid pumps to the RCS for reactivity control.

The requirements for Component Cooling Water, River Water (Unit 1), and Service Water (Unit 2) controls provide assurance that cooling water support systems are available to assist in maintaining the plant in Mode 3.

The addition of a specific surveillance requirement to verify the operability of control and transfer switches is necessary to ensure these functions can be transferred to and operated from the Emergency Shutdown Panels. As such, the proposed change provides additional assurance that the plant can be maintained in a safe, stable condition from outside the control room without adversely affecting the safe operation of the plant. This change is designated more restrictive because the ITS specifies additional requirements (for transfer and control switches) that are not required by the CTS.

## *Removed Detail Changes (LA)*

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS LCO 3.3.3.5 states in part that the required channels "...shall be OPERABLE with readouts displayed external to the control room." ITS LCO 3.3.4 states "The Remote Shutdown System Functions shall be OPERABLE." The ITS does not contain a reference to readouts displayed external to the control room. The CTS is revised to conform to the ITS. This changes the CTS by moving the description of the display location to the associated ITS Bases.

The removal of this descriptive detail, which is related to the Remote Shutdown System design, from the TS is acceptable because this type of information is not necessary to be included in the TS to provide adequate protection of public health and safety. The ITS Bases describe the Remote Shutdown System which consists of the BVPS Emergency Shutdown Panels. The bases also describes the need for a Remote Shutdown System that allows the plant to be maintained in Mode 3 from a location outside of the control room. The TS retain the requirement for an operable Remote Shutdown System with the required functions (controls and indications) detailed in the ITS Bases. As such, the TS continue to provide adequate assurance that the capability to safely maintain the plant in Mode 3 from outside the control room will be available when needed. This change is also acceptable because the removed information will be adequately controlled in the TS Bases. Changes to the Bases are controlled by the TS Bases Control Program which is specified in the administrative section (Section 5) of the ITS. This program provides for the evaluation of Bases changes in accordance with 10 CFR 50.59 to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.2 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* The CTS LCO 3.3.3.5 refers to CTS Table 3.3-9 for the required instrumentation. ITS LCO 3.3.4 simply states that "The Remote Shutdown System Functions shall be OPERABLE." The detail from CTS Table 3.3-9 is moved to the ITS Bases and reformatted as ITS Table 3.3.4 –1. Technical changes to the CTS requirements on Table 3.3-9 are addressed by separate DOCs identified in the markup of Table 3.3-9. This DOC is only intended to address the movement of CTS requirements in Table 3.3-9 from the specification to the ITS Bases.

The removal of the CTS Table detail, which is related to the design features of the BVPS Emergency Shutdown Panels, from the TS is acceptable because this type of information is not necessary to be included in the TS to provide adequate protection of public health and safety. The TS retain the requirements for the Remote Shutdown System to be OPERABLE. The TS continues to require adequate system surveillance testing to assure continued operability. The descriptive details of the specific functions, controls and indications required for system operability are contained in the associated ITS Bases. The proposed change is consistent with the ISTS format where the description of system operability is included in the associated TS Bases. This change is also acceptable because the removed information will be adequately controlled in the TS Bases. Changes to the Bases are controlled by the TS Bases Control Program specified in Section 5 of the TS. This program provides for the evaluation of Bases changes in accordance with 10 CFR 50.59 to ensure changes to the TS Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the TS.

## *Administrative Changes (A)*

A.1 In the conversion of the Beaver Valley Power Station current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering or order, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

Due to the large number of such changes, A.1 changes may not always be marked on each CTS page. Marked or unmarked, all A.1 changes are identified by a single annotation of A.1 at the top of the first page of each CTS. These changes include all non-technical modifications of requirements to provide consistency with the ISTS, including all significant format changes made to update the older NUREG-0452 Technical Specification presentation to the ISTS format. This type of change is also associated with the movement of requirements within the Technical Specifications and with changes made to the presentation of Technical Specifications requirements to combine the Unit 1 and 2 Technical Specifications into one document and highlight the differences between the Unit 1 and 2 requirements. These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS requirements.

A.2 CTS LCO 3.3.3.5 states "The remote shutdown monitoring instrumentation channels shown in Table 3.3-9 shall be OPERABLE with readouts displayed external to the control room." ITS LCO 3.3.4 states "The Remote Shutdown System Functions shall be OPERABLE." The CTS is revised to conform to the ISTS. This changes the CTS by referencing the required Remote Shutdown instrumentation by "Functions" instead of "channels". The relocation of CTS Table 3.3-9 to the ITS Bases is discussed in a less restrictive DOC associated with the markup of Table 3.3-9. This DOC only addresses the reformatting of the CTS LCO statement to address Remote Shutdown System Functions.

This change is acceptable because technical requirements for the individual instrument channels associated with each Remote Shutdown System Function continue to be specified in the ITS Bases Table that lists the required Remote Shutdown System Functions. In the ITS, the required channels are grouped by Remote Shutdown System Function and the Function is referenced in the LCO. Each required channel specified for a particular Function must be operable for the Function to be operable. As such, the proposed change only represents a change in the format and presentation of the CTS requirements. Therefore, the change is designated as administrative because the technical requirements for individual channels continue to be specified in the corresponding ITS Table.

A.3 CTS LCO 3.3.3.5 Action states "With the number of OPERABLE remote shutdown monitoring channels less than required by Table 3.3-9, either: Restore the inoperable channel to OPERABLE status within 7 days, or be in HOT SHUTDOWN within the next 12 hours." ITS LCO 3.3.4 Action A requires "One or more required Functions inoperable. Restore required Function to OPERABLE status in 30 days." Condition B states "Required Action and associated Completion Time not met be in MODE 3 in 6 hours and be in MODE 4 in 12 hours." This changes the CTS requirements for the remote shutdown by stating the requirements in the ITS format (i.e., referring to Functions instead of channels). The change from 7 days to 30 days for restoring an inoperable channel to OPERABLE status is addressed by a less restrictive DOC and the requirement to be in MODE 3 within 6 hours is addressed by a more restrictive change. This DOC is intended to address the change in terminology used in the Action statement.

This change is acceptable because technical requirements for the individual instrument channels associated with each Remote Shutdown System Function continue to be specified in the ITS Bases Table that lists the required Remote Shutdown System Functions. In the ITS, the required channels are grouped by Remote Shutdown System Function and the Function is referenced in the LCO and Actions. Each required channel specified for a particular Function must be operable for the Function to be operable. Actions in the ITS are still initiated based on inoperable channel(s) (for a given Function) the same as in the CTS. As such, the proposed change only represents a change in the format and presentation of the CTS requirements. Therefore, the change is designated as administrative because the technical requirements for individual channels continue to be specified in the corresponding ITS Table.

A.4 The CTS 3.3.3.5 Action specifies that "With the number of OPERABLE remote shutdown monitoring channels less than required...." The corresponding ITS 3.3.4 Action states "One or more required Functions inoperable." In addition, the ITS Action is modified by a Note, which states "Separate Condition entry is allowed for each Function." The CTS is revised to be consistent with the ISTS. This changes the CTS by the addition of the ISTS note allowing separate condition entry for each inoperable Function. The change from "channel" to "Function" in the Action requirements is addressed in another DOC for changes to the Action requirements.

The affected CTS Action is written to address more than one inoperable channel. If more than one channel is inoperable, the CTS Action would be entered separately for each inoperable channel. The proposed change represents the addition of a format convention of the ISTS that provides consistent guidance for how this type of Action is applied. However, the ISTS guidance is consistent with how the CTS Action is currently applied. The CTS Action is specifically written to address multiple inoperable channels. Actions intended to address only one inoperable component are specifically written as "one inoperable...." As such, the addition of the ISTS Note is considered a clarification of the CTS Action that does not modify the technical requirements of the CTS. The proposed change is made to adopt the format conventions of the ISTS for Actions that allow for multiple inoperable components. This change is designated as administrative because the technical requirements of the specifications have not changed.

A.5 CTS 4.3.3.5 states "Each remote shutdown monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the Channel Check and Channel Calibration operations at the frequencies shown in Table 4.3-6." A note in CTS Table 4.3-6 modifies the Source Range surveillance requirements. The Note states "Operability required in accordance with Specification 3.3.1.1." Table 4.3-6 does not specify a Channel Calibration for the Source Range indication. However, Specification 3.3.1.1 requires a refueling interval (18 month) Channel Calibration for the Source Range instrumentation with an exception for neutron detectors. The remaining Remote Shutdown channels on CTS Table 4.3-6 have a frequency requirement for the Channel Calibration listed as R (Refueling or 18 months). ITS SR 3.3.4.2 states "Perform Channel Calibration for each required indication instrumentation channel." The Frequency for the ISTS Channel Calibration surveillance is 18 months. The ISTS Channel Calibration surveillance requirement is modified by a note that states "Neutron Detectors are excluded from Channel Calibration". The CTS surveillance is revised to conform to the ISTS surveillance. This changes the CTS by including a separate 18-month Channel Calibration surveillance with a specific exception for neutron detectors. In addition the change adds the 18-month Channel Calibration requirement to the Remote Shutdown System Source Range indication.

The proposed change is acceptable because the requirement for periodic Channel Calibrations at an 18-month frequency remains unchanged. The Note that modifies the ITS Channel Calibration is also acceptable because a neutron detector is not an adjustable device and can not technically be included in a Channel Calibration as defined in the TS (Section 1.0 Definitions). The addition of the ITS note provides a clarification consistent with the existing CTS note (note 2 in Table 4.3-6) associated with the source range neutron flux that specifies the operability of this instrumentation be in accordance with Specification 3.3.1.1 (Reactor Trip System). In Specification 3.3.1.1, the source range instrument 18-month Channel Calibration requirements are modified by the same note (neutron detector exclusion) as the ISTS SR 3.3.4.3. The proposed Remote Shutdown System Channel Calibration surveillance, with the exception for neutron detectors, eliminates the need for the CTS note modifying the source range indication requirements and allows the 18-month Channel Calibration surveillance to be directly assigned to the source range instrumentation (consistent with the applicable surveillance in CTS 3.3.1.1). As such, the proposed change provides a more direct clarification of the surveillance requirements applicable to the source range instrumentation than the CTS reference to Specification 3.3.1.1. However, the CTS requirement for an18-month channel calibration of the source range instrumentation remains unchanged. This change is designated as administrative because the technical requirements of the CTS are not changed.

A.6 CTS surveillance 4.3.3.5 requires that "Each remote shutdown monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-6. The corresponding ISTS surveillance requirements (SR 3.3.4.1 and SR 3.3.4.3) specify a Channel Check and Channel Calibration for each Remote Shutdown System instrument channel but do not reference a Table. The CTS surveillance is revised to conform to the corresponding ISTS surveillance requirements. Technical changes to the CTS surveillance requirements are identified in the markup of Table 4.3-6 and in the inserted ISTS surveillances. This DOC is intended to address the replacement of the single CTS surveillance and associated Table 4.3-6 with the individual ISTS surveillances for Channel Check and Channel Calibration.

The proposed change involves the reformat and simplification of the CTS surveillance requirements to conform to the ISTS format. CTS Table 4.3-6 is eliminated and the single CTS surveillance is replaced by two ITS surveillances. The proposed change is acceptable because the requirement to perform the CTS surveillances that verify the Remote Shutdown System operability are retained in the new ITS SR 3.3.4.1 and SR 3.3.4.2. Thus, the proposed change continues to provide adequate assurance the required instrumentation is maintained operable in a manner similar to the CTS. The proposed change does not introduce a technical change to the CTS requirements (except for those changes addressed by other DOCs). This DOC only addresses the change in format and presentation of the requirements. As such, this change is designated as administrative because the changes to the format and presentation of the CTS requirements do not involve technical changes.

# ITS 3.3.5 Loss of Power Diesel Generator Start and Bus Separation Instrumentation

# CTS 3.3.2.1 Engineered Safety Feature Actuation System Instrumentation

## DISCUSSION OF CHANGE (DOC)

## *Less Restrictive Changes (L)*

L.1 Unit 2 only. *(Category 3 – Relaxation of Completion Time and Category 4 Relaxation of Required Action)* The Unit 2 ESFAS Functional Unit 6.a.1 (Undervoltage - Trip Feed) in Table 3.3-3 is assigned Action Statement 33 in the CTS. This Unit 2 loss of power function consists of two channels. CTS Action statement 33 is applicable to instrument functions that consist of only a single channel (i.e., the corresponding Unit 1 instrument Function). Even though the corresponding Unit 1 function consists of 1 channel and the Unit 2 function consists of two channels, during the initial licensing of Unit 2, the Unit 2 CTS function 6.a.1 was assigned Action statement 33 to maintain consistency with the Unit 1 technical specifications. This resulted in an overly conservative Action being assigned to this Unit 2 instrument Function.

The proposed change revises the Actions for the Unit 2 ESFAS Functional Unit 6.a.1 (Undervoltage - Trip Feed) in CTS Table 3.3-3 to be consistent with the other loss of power instrument functions with two required channels. The CTS Action statement 33 specifies:

> "With the number of OPERABLE Channels one less than the Total Number of Channels, the Emergency Diesel Generator associated with the 4kv Bus shall be declared inoperable and the ACTION Statements for Specifications 3.8.1.1 or 3.8.1.2, as appropriate, shall apply.

The applicable CTS Action does not allow for placing the inoperable channel in trip or provide an Action for a second inoperable channel as does CTS Action 34 which is applicable to the other loss of voltage functions with two available channels. The Unit 2 ESFAS Functional Unit 6.a.1 (Undervoltage - Trip Feed) in CTS Table 3.3-3 is not different from the other two channel functions for which CTS Action 34 is applicable. Therefore, the action applicable to Unit 2 Functional Unit 6.a.1 (Undervoltage - Trip Feed) is revised to be consistent with the proposed ITS 3.3.5 Actions for the other loss of voltage instrument functions with two channels (i.e., ITS Conditions B, C, and E). ITS Action Conditions B, C, and E correspond to CTS Action 34 for two channel functions. The changes to CTS Action 34 that result in ITS Conditions B, C, and E are addressed in the markup of CTS Action 34. The proposed ITS 3.3.5 Actions for two channel loss of voltage instrument Functions specify:

> Condition B: One or more Functions with one channel per bus inoperable. B.1 Place channel in trip in 6 hours.

Action B.1 is modified by a note that states The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels provided the corresponding instrument channels, electrical bus, and DG in the other train are OPERABLE.

Condition C: One or more Functions with two channels per bus inoperable. C.1 Restore one channel per bus to OPERABLE status in one hour.

Condition E: Required Action and associated Completion Time not met. E.1 Enter applicable Condition(s) and Required Action(s) for the associated DG made inoperable by LOP DG start or Bus Separation instrumentation immediately.

The proposed change conforms more closely with the ISTS Actions for this type of instrumentation and allows a more reasonable time (6 hours) to take Action with a single inoperable loss of power instrument channel. The immediate CTS Action to declare the DG inoperable is overly conservative. The proposed time to place the channel in trip is consistent with the time allowed in the ISTS to place a channel in trip and allows this activity to be conducted in a safe and controlled manner. This allowance is acceptable because once placed in the tripped condition, the affected instrument channel is performing its intended safety function and there is no reason to declare the affected DG inoperable. In addition, the proposed change provides an Action for the condition of two inoperable channels that requires one channel to be restored within an appropriately short time (1 hour). The addition of this Action provides a sufficiently short time to correct an instrument problem before the DG must be declared inoperable. The proposed Action for two inoperable channels reduces the potential for declaring the DG inoperable by allowing a minimal amount of time to correct the affected bus instrumentation before the DG must be declared inoperable. In the event that an Action is not completed within the required Completion Time the proposed Actions also include a default condition similar to the CTS requirements that specifies the associated DG be declared inoperable. In addition, the proposed Actions contain a note that allows the inoperable channel placed in trip to be bypassed for up to 4 hours provided the other train (relays, bus, and DG) is operable. This provision of the proposed Actions would allow for routine calibrations to be accomplished on the remaining operable channel without declaring the associated DG inoperable. Considering that the note requires the other train to be operable and restricts the time allowed in this condition to 4 hours and the fact that the instrument function (i.e., bus separation) may be accomplished manually, the proposed change continues to assure the plant is operated in a safe manner while avoiding the necessity of declaring the associated DG inoperable in order to complete routine instrument calibrations. The proposed change is designated less restrictive as less stringent Actions are applicable in the ITS than the CTS.

L.2 *(Category 3 – Relaxation of Completion Time)* CTS Action 33 applies when one loss of power channel is inoperable and requires that the associated DG be declared inoperable immediately. The corresponding ITS Action Condition D is also applicable to a single inoperable channel but allows one hour to restore the inoperable channel to operable status prior to declaring the associated DG inoperable. The CTS Action is revised to conform to ITS Action Condition D (similar to ISTS Action Condition B). This changes the CTS by providing an additional hour to restore the inoperable channel.

CTS Action 33 is applicable to the loss of power functions that consist of a single channel (except for the Unit 2 CTS Functional Unit 6.a.1 (Undervoltage - Trip Feed) discussed in DOC L.1). As such the loss of power function provided by this instrumentation is lost when the single channel becomes inoperable. In ISTS Condition B, the ISTS allows one hour for the condition where a loss of function may exist.

The proposed change allows a limited time to restore the inoperable loss of power instrument channel before the loss of power instrumentation Actions require the associated DG Actions to be entered. The Actions applicable to the affected DG provide additional restoration time and assure the DG in the opposite train is maintained operable. The proposed change is acceptable because it does not significantly affect the safe operation of the plant under the specified Condition, considering the availability of the redundant DG and trains of electrical buses, the capability to manually separate buses or start the affected DG, and the relatively short period of time allowed by the proposed change before the associated DG Actions must be entered. Entering the associated DG Actions does not significantly improve the existing plant condition, therefore, delaying this Action for one hour to more properly assess the inoperable loss of power instrumentation and proceed in a more controlled manner does not significantly increase plant risk and is appropriate and consistent with the ISTS Actions for similar conditions (i.e., ISTS 3.3.5 Action Condition B). In addition, the proposed change reduces the potential for declaring a DG inoperable unnecessarily due to insufficient time to assess the condition of the affected instrumentation. This change is designated as less restrictive because additional time is allowed to restore parameters to within the LCO limits than was allowed in the CTS.

L.3 *(Category 3 – Relaxation of Completion Time)* CTS Action 34 requires that "With the number of OPERABLE channels one less than the Minimum Number of Channels, place the inoperable channel in the tripped condition within 1 hour...." The corresponding ISTS Action Condition A (ITS Condition B) provides a 6 hour completion time to place a channel in trip. The CTS Action is revised to conform to the ISTS. This changes the CTS by providing additional time to place an inoperable channel in trip.

CTS Action 34 is applicable to the bus separation loss of power instrument functions that consist of two channels per bus arranged in a two-out-of-two trip logic that prevents a spurious trip of a single channel from separating the associated emergency bus from offsite power. The BVPS design of this instrumentation is not single failure proof for each electrical bus in a given train and relies on the other train of electrical busses and DG for redundant protection. Therefore, CTS Action 34 allows plant operation to continue with one inoperable channel placed in the trip condition. However, CTS Action 34 only allows 1 hour to place a channel in trip. Failure to place the channel in trip in 1-hour results in the Action requirement to enter the applicable Actions of the associated DG made inoperable by the affected loss of power instrumentation. As such, the proposed change only results in a small additional delay, to place an inoperable channel in trip, prior to declaring the associated DG inoperable. The proposed change allows a more reasonable time in which the required Action may be accomplished in a more controlled and safe manner without challenging plant personnel and introducing the potential for error. The 6-hour allowance to place a channel in trip is a consistent and recognized time frame to perform this type of Action throughout the ISTS instrumentation specifications. In addition, the proposed change reduces the potential for declaring a DG inoperable unnecessarily due to insufficient time to perform the required Action in a safe and controlled manner. As such, the proposed change is acceptable considering the relatively short period of time involved, the availability of the redundant train of electrical busses and DG to provide emergency power, the low probability of an event that would require this instrumentation to function within the proposed time to place the channel in trip, the capability to manually separate the affected buses if necessary, and the reduction in risk due to insufficient time to perform the action. This change is designated as less restrictive because additional time is allowed to perform Actions than was allowed in the CTS.

L.4 *(Category 4 Relaxation of Required Action)* CTS Action 34 requires that an inoperable loss of power channel be placed in the trip condition and allows operation to continue with the affected channel in trip. The corresponding ITS Action Condition B is similar except for the Required Action Note that states, "The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels provided the corresponding instrument channels, electrical bus, and DG in the other train are OPERABLE." The CTS is revised to conform to the ITS. The proposed change provides an allowance to perform routine surveillance testing of the remaining operable channel on an electrical bus when one of the two channels on that bus is in trip.

CTS Action 34 is applicable to the bus separation loss of power instrument functions that consist of two channels per bus arranged in a two-out-of-two trip logic that prevents a spurious trip of a single channel from separating the associated emergency bus from offsite power. The BVPS design of this instrumentation is not single failure proof for each electrical bus in a given train and relies on the other train of electrical busses and DG for redundant protection. Therefore, CTS Action 34 allows plant operation to continue with one inoperable channel placed in the trip condition.

However, the CTS Action does not provide a means to functionally test the remaining operable channel when required by the technical specification surveillances. Functional tests are required to be performed periodically online to verify the trip capability of the loss of power instrument channels. With one of the two channels in trip, the remaining channel can not be tested (tripped) without causing an inadvertent bus separation. Failure to perform a required surveillance within the specified interval results in the remaining loss of power channel on that bus being declared inoperable. The resulting Actions would require one inoperable channel to be restored to operable status within one hour or that the associated DG be declared inoperable. As such, the CTS would require the surveillance be performed within the one hour Action time for two inoperable channels or that the surveillance be performed after the associated DG is declared inoperable.

The proposed change provides a necessary allowance to complete the required surveillance testing without declaring additional equipment inoperable. The proposed change is consistent with similar notes used throughout the ISTS instrument specifications (including ISTS 3.3.5 Action A.1) for this purpose.

The BVPS loss of power instrument design consists of two channels per bus and requires that both channels trip to separate the emergency bus from off site power. Therefore, when one channel is bypassed the instrument function is made unavailable. The proposed note contains the additional requirement to verify the other train operable before bypassing a channel which provides assurance that the redundant safety function remains available. The proposed Note is similar to several such notes used in the ISTS RTS and ESFAS Actions that allow one entire actuation logic train of RTS or ESFAS to be bypassed provided the other train is operable. The allowance to bypass one channel and render the instrument function unavailable to perform required testing is acceptable due to the short time allowed by the note (4 hours) and the provision of the Note that requires the other train to be operable. As such, the time in which the affected instrumentation is unavailable is sufficiently limited to minimize risk (based on the acceptability of bypassing an entire train of RTS and ESFAS for the same amount of time) and that the capability to perform the required safety function is preserved by requiring the other train to be operable. In addition, considering that the most probable outcome of performing any surveillance is that the affected plant equipment is found to be operable, requiring the affected channel or DG to be declared inoperable for failure to perform the required surveillance is overly conservative and unnecessary to assure the operability of the affected instrument channel. This change is designated as less restrictive because less stringent Actions are specified in the ITS than in the CTS.

L.5 *(Category 6- Relaxation of Surveillance Requirement Acceptance Criteria)* The CTS surveillances for the loss of power Functions specified in Table 4.3-2 require a quarterly Channel Functional Test (CFT). The corresponding ITS surveillance requirement for this ESFAS Function (SR 3.3.5.5) specifies a quarterly Trip Actuating Device Operational Test (TADOT). The ITS TADOT requirement is modified by a note that specifies that verification of setpoints is not required. The CTS surveillance is revised to conform to the ITS. This changes the CTS by adding a specific exception for setpoint verification when performing the quarterly functional test. The difference between the ITS TADOT defined term and the CTS CFT defined term is addressed in the DOCs associated with TS Section 1.0, Definitions. This DOC is only intended to address the addition of the ITS Note that takes exception to the verification of setpoints.

The relay instrumentation associated with this Function consists of simple contacts operated by an electro-mechanical or digital relay that is not located where it is subject to an adverse environment. The associated instrument signal from the relay is not processed through complicated circuitry consisting of a variety of electronic components subject to age or environmental affects that may contribute to significant setpoint drift. In addition, setpoint verification requires removal of the associated relay which reduces the availability of the protection function, increases equipment wear, and introduces the potential for error by requiring repeated removal and installation of the equipment. It should also be noted that the addition of the proposed exception to the verification of setpoints is consistent with the requirements of the CTS CFT definition which also does not require setpoint verification.

Based on the discussion above and the fact that the operation of the affected relays and contacts continue to be tested every quarter and that the setpoints continued to be verified periodically every 18 months by the required channel calibration, the proposed change is acceptable. The proposed change provides adequate assurance that the affected instrumentation is maintained operable and does not adversely affect the safe operation of the plant. The proposed change is designated less restrictive because the ITS requirement has a more explicit exception in the surveillance requirement than the CTS requirements stated in the CFT definition.

## ***More Restrictive Changes (M)***

M.1 The CTS requires the loss of power instrumentation operable in Modes 1-4. ISTS 3.3.5 requires this instrumentation operable in Modes 1-4 and when the associated DG is required to be operable by LCO 3.8.2, "AC Sources - Shutdown. ITS LCO 3.8.2, AC Sources Shutdown, requires one DG to be operable in Modes 5 and 6 (both units) and when moving irradiated fuel (Unit 1) or recently irradiated fuel (Unit 2). The CTS Applicability for the loss of power instrumentation is revised to conform to the ISTS Applicability. This changes the CTS by requiring the loss of power instrumentation to be operable when the associated DG is required operable by ITS LCO 3.8.2.

The purpose of the ISTS requirement for the loss of power instrumentation to be operable when the associated DG is required operable by LCO 3.8.2 is to provide additional assurance of reliable emergency power to support core cooling (RHR) operation during normal shutdown conditions and to support the operation of any equipment that may be necessary to mitigate the effects of a fuel handling accident. The proposed change to the CTS is acceptable because it provides additional assurance of reliable emergency power during shutdown conditions. As such, the proposed change helps to ensure the capability to maintain adequate core cooling and to mitigate a fuel handling accident. Therefore, the proposed change does not adversely affect the safe operation of the plant. The proposed change is designated more restrictive because the ITS contains more stringent requirements for the loss of power instrumentation than the CTS.

## ***Removed Detail Changes (LA)***

LA.1 *(Type 1 - Removing Details of System Design and System Description, Including Design Limits)* The Channels To Trip column in CTS Table 3.3-3 is deleted consistent with the ISTS. The corresponding ITS 3.3.5 Table 3.3.5-1 does not include this information. This information is included in the ITS Bases.

The proposed change is acceptable because the Channels To Trip column in CTS Table 3.3-3 contains information describing the design of the ESFAS which is not required to ensure the ESFAS system is maintained operable. The ISTS "Required Channels" specifies the necessary channels to maintain the ESFAS operable and the ISTS Actions provide the appropriate measures when the Required Channels are not met.

ESFAS design features are described in the UFSAR. Changes to the plant design as described in the UFSAR are subject to the review requirements of 10 CFR 50.59. In addition, the requirements for the ESFAS design are also controlled by the required industry standards (IEEE 279, etc.), federal regulations (General Design Criteria), and specific NRC requirements and guidelines pertaining to the

ESFAS. Changes to these plant design requirements are in turn controlled in accordance with the Quality Control Programs that are required by federal regulations (10 CFR 50.54). Also, this change is acceptable because the design description information will be retained within the ITS bases for each ESFAS Function and changes to the ITS Bases are controlled by the TS Bases Control Program specified in the Administrative Controls Section of the TS. This program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because design detail is being removed from the TS.

LA.2 Unit 1 only. *(Type 3 – Procedural Details for Meeting Tech Spec Requirements)* Unit 1 CTS Table 3.3-3 for function 6.a.2 in the Allowable Value column states the following, "≥ 71.2% of rated bus voltage with a < 0.9 second time delay (includes auxiliary relay times)." The corresponding ITS Allowable Value specified for this Unit 1 instrument function is ≥ 2962 V with a time delay of < 0.9 second. The CTS Allowable Value is revised to conform to the ITS. The conversion from % rated bus voltage to a specific voltage is a format change that is addressed by DOC A.1. This DOC is intended to address the removal of the descriptive text (includes auxiliary relay times). As such, the CTS is revised by moving the requirement that the time delay includes auxiliary relay times from the Allowable Value to the ITS Bases.

The removal of this descriptive information, which describes how the TS requirements must be met, from the TS is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The TS still retain the requirement for Channel Calibration testing of the affected instrument Function. The Channel Calibration verifies the correct instrument setpoint including any required time delay. The proposed change moves the description details of the time delay requirement to the Bases. As such, the proposed change is also acceptable because the removed information will be adequately controlled in the TS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Section 5 of the TS. This program provides for the evaluation of Bases changes in accordance with 10 CFR 50.59 to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to meeting the TS requirements is being removed from the TS.

## *Administrative Changes (A)*

A.1 In the conversion of the Beaver Valley Power Station current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering or order, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

Due to the large number of such changes, A.1 changes may not always be marked on each CTS page. Marked or unmarked, all A.1 changes are identified by a single annotation of A.1 at the top of the first page of each CTS. These changes include all non-technical modifications of requirements to provide consistency with the ISTS, including all significant format changes made to update the older NUREG-0452 Technical Specification presentation to the ISTS format. This type of change is also associated with the movement of requirements within the Technical Specifications and with changes made to the presentation of Technical Specifications requirements to combine the Unit 1 and 2 Technical Specifications into one document and highlight the differences between the Unit 1 and 2 requirements. These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS requirements.

A.2 The CTS Table 3.3-3 table heading titled "Total Number of Channels" is revised to be "Required Channels" consistent with the corresponding ITS Table 3.3.5-1 Table headings. In addition, the Minimum Channels Operable column of CTS Table 3.3-3 is deleted consistent with the content of the corresponding ITS Table 3.3.5-1.

The proposed change is acceptable because the revisions described above do not result in technical changes to the number of instrument channels required operable or the applicable Actions when the required channels are not met. All Actions for an inoperable instrument channel in the ISTS are based on the Required Channels specified for the affected function. The new ISTS Action Conditions assigned to each Instrument Function will specify the appropriate action when one or more "Required" instrument channels are inoperable. The minimum channels column used in the CTS to identify the number of operable channels for which continued operation is permissible is no longer used or required in the TS. The ISTS Actions encompass the concept of the minimum required channels, i.e., the plant would be required to be placed in a Mode or Condition outside the Applicable Mode when the minimum number of channels for continued operation is not met. The ISTS Actions accomplish this without a specific reference to the minimum required channels. As such the proposed changes described above do not introduce a technical change to the CTS requirements. In addition, any technical changes to the CTS Actions associated with the ESFAS instrument functions are identified in the markup of those Actions and addressed in the DOCs associated with the changes to the CTS Actions. This Doc is intended to address the reformat of the CTS Table 3.3-3 to conform to the corresponding ITS Table 3.3.5-1. Therefore, this change is designated administrative.

A.3 Function 6 on Table 3.3-3 in the CTS ESFAS specification contains the "Loss of Power" instrumentation requirements. Two types of instrumentation are listed under Function 6 in CTS Table 3.3-3. Function 6 contains requirements for the instrumentation associated with the DG start on loss of voltage (DG start instrumentation) and for the instrumentation associated with protecting the emergency busses from undervoltage or degraded voltage conditions (bus separation instrumentation). The corresponding ISTS requirements for this type of instrumentation are contained in proposed ITS 3.3.5, "Loss of Power (LOP) Diesel Generator (DG) Start and Bus Separation Instrumentation". As such, the CTS requirements on Table 3.3-1 are moved to ITS 3.3.5 Table 3.3.5-1. In addition to moving the CTS requirements, the CTS requirements are reorganized into the subcategories of "Loss of Voltage" and "Degraded Voltage". The individual instruments listed on ITS Table 3.3.5-1 are further labeled as "DG Start" or "Bus Separation" consistent with the instrumentation function.

The proposed re-organization of the CTS instrument functions on ITS Table 3.3.5-1 is consistent with the actual function performed by the instrument and more clearly identifies each of the Loss of Power instruments listed on the table. The proposed change is acceptable because it only involves a format change and does not alter the technical requirements associated with each instrument. Therefore, the proposed format changes better describe each instrument and are consistent with the current licensing basis for the affected instrumentation. The proposed changes are designated administrative and are acceptable because they do not result in technical changes to the CTS requirements.

A.4 The CTS Action statements #33 and #34 applicable to the Loss of Power Instrumentation are replaced by the corresponding ITS Action Conditions (i.e., A, B, C, D and E). All the proposed ITS Action Conditions, with the exception of Condition A, are derived from the corresponding CTS Action statements (#33 and #34). Changes to the CTS Action statements to derive the ITS Action Conditions are addressed in the markup and DOCs associated with CTS Actions 33 and 34. However, there is no corresponding CTS Action statement for ITS Condition A. ITS Action Condition A provides direction to the technical specification user to enter the applicable Action Conditions specified in Table 3.3.5-1. ITS Action Condition A states, "One or More Functions with one or more required channels inoperable. Enter the applicable Condition(s) referenced in Table 3.3.5-1 for the affected channel(s) immediately". ITS 3.3.5 Condition A is similar to Action Condition A in the ISTS RTS and ESFAS specifications and is necessary due to the use of the Table format (Table 3.3.5-1) to specify the individual requirements (including the applicable Actions) for each instrument function addressed by ITS 3.3.5. As such, the addition of ITS 3.3.5 Action Condition A is a requirement of the ISTS Table format and is necessary to more closely conform to the ISTS that use similar Tables (i.e., ISTS 3.3.1 and ISTS 3.3.2). The use of ITS 3.3.5 Action Condition A does not introduce a technical change to the CTS requirements. The use of ITS Table 3.3.5-1 and Action Condition A is a change in format and presentation only. Therefore, the addition of ITS Action Condition A is designated administrative.

A.5 CTS Action 33 specifies in part "with the number of OPERABLE Channels one less than the Total Number of Channels...." The corresponding ITS 3.3.5 Action Condition D is applicable to "one or more Functions with one channel per bus inoperable." This portion of CTS Action 33 is revised to be consistent with the corresponding ITS Action Condition D. This changes the CTS by reformatting the presentation of Action statement 33.

The proposed change is acceptable because it continues to address the same condition (i.e., one inoperable channel). The ITS Action is stated in terms of the number of inoperable channels instead of how many channels less than the total number are operable. The result is the same. The ITS Action is based on the "required channels" specified in Table 3.3.5-1. The use of "required channels" specified in Table 3.3.5-1 does not result in a technical difference from the term "total number of channels" used in the CTS Action 33. The number of channels remains the same. As such the proposed changes to the CTS Action 33 involve only the format and presentation of this information. The proposed change is designated administrative because it does not involve a technical change to the CTS Action statement.

A.6 CTS Action 34.a states in part that "With the number of OPERABLE channels one less than the Minimum Number of Channels, place the inoperable channel in the tripped condition...." The corresponding ITS Action Condition B states that with "One or more Functions with one channel per bus inoperable place the channel in trip." The CTS Action is revised to conform to the ITS Action Condition. This changes the CTS by reformatting the presentation of Action statement 34.a.

The proposed change is acceptable because it continues to address the same condition (i.e., one inoperable channel on a bus). The ITS Action is stated in terms of the number of inoperable channels instead of how many channels less than the total number are operable. The result is the same. The ITS Action is based on the "required channels" specified in Table 3.3.5-1. The use of "required channels" specified in Table 3.3.5-1 does not result in a technical difference from the term "minimum number of channels" used in the CTS Action. The total number of channels required operable remains the same. As such the proposed changes to the CTS Action involve only the format and presentation of this information. The proposed change is designated administrative because it does not involve a technical change to the CTS Action statement.

A.7 CTS Actions 33 and 34.a and 34.b contain default requirements to declare the associated DG inoperable and apply the Required Actions of the DG specification if the other required Actions specified in CTS Actions 33 and 34 are not met. ITS 3.3.5 contains one default Action Condition (E) that is applicable when any Required Action and associated Completion Time is not met. ITS Condition E specifies that the applicable Condition(s) and Required Action(s) for the associated DG made inoperable by the LOP DG start or bus separation instrumentation be entered. The CTS default Actions are revised to conform with ITS Action Condition E. This changes the CTS by consolidating the three different CTS default Actions into a single ITS Action Condition.

The proposed change is acceptable because the results of the ITS Action Condition and the CTS Actions are the same (i.e., to enter the required Actions of the associated DG made inoperable by the loss of power instrumentation). The proposed change does not introduce a technical difference to the CTS requirements. The proposed change only involves a change in the presentation of the CTS requirements such that they conform to the ISTS format. The proposed change is designated administrative because it does not result in a technical change to the CTS.

A.8 CTS Action 34.b requires that "with the number of OPERABLE channels two less than the Minimum Number of Channels, restore at least one of the two channels to OPERABLE status and place the other in the tripped condition within 1 hour...." The corresponding ITS Action Condition C specifies that with "One or more Functions with two channels per bus inoperable. Restore one channel per bus to OPERABLE status in 1 hour. The CTS Action is revised to conform to the ITS Action. This changes the CTS Action by stating the applicable Action condition in terms inoperable channels instead of operable channels, eliminating the reference to the minimum number of channels, and eliminating the requirement to place the other channel in the tripped condition.

The proposed change is acceptable because it continues to address the same condition (i.e., two inoperable channels). The ITS Action is stated in terms of the number of inoperable channels instead of how many channels less than the minimum number are operable. The result is the same. The ITS Action is based on the "required channels" specified in Table 3.3.5-1. The use of "required channels" specified in Table 3.3.5-1 does not result in a technical difference from the term "minimum number of channels" used in the CTS Action 34.b. The number of channels remains the same. As such, the reference to the minimum number of channels is no longer required.

Similarly, the requirement to place the other channel in trip is also eliminated from CTS Action 34.b as it is not required to be repeated in this Action (this Action requirement is first stated in CTS Action 34.a). The ITS Action Conditions B (one inoperable channel - place the channel in trip) and C (two inoperable channels - restore one channel to operable status in one hour) work together for the applicable instrument Functions to accomplish the same result as CTS Action 34.b. ITS Action Conditions B and C remain applicable at the same time, so there is no need to repeat the requirement to place one channel in trip as is done in CTS Action 34.b. As such, this change represents a change in the format and presentation of the CTS Actions to conform to the ITS and the elimination of the requirement to place the other channel in trip from CTS 34.b does not introduce a technical change to the CTS.

The changes described above are designated administrative because they do not result in a technical change to the CTS.

A.9 CTS Table 4.3-2 contains the surveillance requirements for the ESFAS Functions that have been moved into ITS 3.3.5. The CTS specifies a Channel Functional Test for these ESFAS Functions. In place of the Channel Functional Test, the ISTS specifies a Trip Actuating Device Operational Test (TADOT).

The CTS is revised to replace the Channel Functional Test requirement with the new ISTS defined TADOT requirement. The CTS Channel Functional Test as well as the new ISTS TADOT are defined terms specified in Section 1.0 of the TS. The addition of the new ISTS defined terms for surveillance testing and the changes to the CTS Channel Functional Test are addressed in the changes made to TS Section 1.0, Definitions. Any technical changes to the requirements for individual ESFAS Functions will be addressed in the detailed markup of those requirements in CTS Table 4.3-2. This DOC is intended to address the replacement of the Channel Functional Test requirement in Table 4.3-2 with the new ISTS TADOT. The ISTS TADOT is intended to address those ESFAS instrument channels that consist of a more simple input such as a manual switch or other device that simply opens or closes contacts in the ESFAS. The TADOT is used to replace the CTS Channel Functional Test for individual instrument channel Functions. The specific ISTS test definition for TADOT provides a more accurate description of the testing that is actually performed on this type of instrument Function.

The proposed change is acceptable because the new test term contains specific test requirements applicable to the loss of power instrument Functions that more accurately describe the required testing for each Function. The proposed change does not introduce a technical change to the method by which each type of instrument is currently tested. The proposed change only results in the use of defined terms that more accurately describe the current test method for each instrument Function. As such, the loss of power Functions continue to be tested in a similar manner as before but the testing being performed is more consistent with the TS defined terms being used to specify the required testing. The proposed change is designated administrative because it does not introduce technical changes to the surveillance testing currently performed for the loss of power instrument Functions.

A.10 CTS Table 4.3-2 contains the surveillance requirements for the loss of power instrumentation (ESFAS Function 6). In addition to specifying the surveillance requirements, the CTS Table also repeats the list of Functions and the applicable Modes for each Function. CTS Table 4.3-2 specifies a Channel Calibration on a refueling (18 month) frequency and a Channel Functional Test on a quarterly frequency for each loss of power instrument function. The corresponding ITS 3.3.5 surveillance requirements (Channel Calibration and TADOT) are not listed in a table format. The ITS 3.3.5 surveillances are presented in the standard format without using a Table. The CTS is revised to conform to the ITS. This changes the CTS by eliminating Table 4.3-2 for the loss of power instrument function surveillances. This DOC is intended to address the elimination of the CTS Table format. Other DOCs specified in the markup of Table 4.3-2 and Table 3.3-2 address technical changes to the CTS requirements (including the applicable Mode change on Table 3.3-2).

The proposed change is acceptable because the technical requirements contained in Table 4.3-2 are retained in proposed ITS 3.3.5 surveillances without the need of a separate table. The CTS Table lists the specific loss of power Functions. In addition, the CTS Table lists the required surveillances and applicable Modes for each Function. However, the applicable Modes and surveillances are the same for each loss of power Function on CTS Table 4.3-2. As such, ITS 3.3.5 continues to list the specific loss of power Functions but only specifies the applicable Modes and surveillances (ITS SR 3.3.5.1 and SR 3.3.5.2) once within ITS 3.3.5 consistent with the more typical presentation of these requirements in the ISTS. As the surveillances and applicable Modes are the same for each Function listed on CTS Table 4.3-2, it is not necessary to repeat this information for each Function on a table. The Table format is more useful when the requirements are different for each Function listed on the Table. Therefore, the technical requirements specified on CTS Table 4.3-2 are retained in the ITS format and elimination of CTS Table 4.3-2 does not result in a technical change to the CTS requirements. The proposed change is designated administrative because it does not result in a technical change to the CTS requirements.

A.11 The loss of power instrumentation is currently specified in CTS 3.3.2.1, "ESFAS" (Functions 6a, b, and c on CTS Table 3.3-3). CTS 3.3.2.1 contains a Note modifying the Actions that states "Separate ACTION statement entry is allowed for each Function." The corresponding ITS 3.3.5 Actions contains a similar note that states "Separate Condition entry is allowed for each Function." The CTS 3.3.2.1 note affecting the loss of power instrument Functions is revised to be consistent with the corresponding ISTS note. This changes the CTS by revising the format of the Actions Note to conform to the ISTS convention for this note.

The proposed change is acceptable because the allowance provided by the ISTS note corresponds directly to the allowance provided by the CTS Note. The note text is revised to conform to the presentation of Actions in the ISTS. As such, the proposed change does not represent a technical change to the CTS. The proposed change only revises the format and presentation of the CTS note in order to fit the ISTS. The proposed change is designated administrative because it does not represent a technical change to the CTS requirements.

A.12 CTS Table 4.3-2 contains the surveillance requirements for the loss of power instrumentation (ESFAS Function 6). The CTS ESFAS surveillances also include the requirement to perform response time testing (ESFAS surveillance 4.3.2.1.3). The ESFAS surveillance requirement for response time testing is not included in Table 4.3-2 but is applicable to all ESFAS instrument functions with a response time specified in the LRM. To see all changes made to the ESFAS response time surveillance 4.3.2.1.3 see the markup and DOCs associated with CTS 3.3.2.1, "ESFAS". The changes made to this surveillance requirement in CTS 3.3.2.1 are applicable to all ESFAS Functions including the loss of power functions. However, as the loss of power instrumentation Functions are being removed from the ESFAS specification and placed in a different specification (ITS 3.3.5) the ESFAS requirement for response time testing must also be moved into ITS 3.3.5. The proposed change re-organizes the location of the ESFAS surveillance requirement (i.e., presents the response time surveillance along with the other surveillance requirements applicable to the loss of power instrumentation). Thus the proposed change maintains the current surveillance requirements for the loss of power instrumentation in the new ITS 3.3.5 specification. The proposed change involves moving requirements from the ESFAS specification to ITS 3.3.5 (SR 3.3.5.3) and does not introduce a technical change to the surveillance requirements applicable to the loss of power instruments in the ESFAS specification. The proposed change is designated administrative because it does not represent a technical change to the CTS requirements.

# Unit 2 ITS 3.3.6 Containment Purge and Exhaust Isolation Instrumentation
# CTS 3.9.9 Containment Purge and Exhaust System
# CTS 3.3.3.1 Radiation Monitoring
DISCUSSION OF CHANGE (DOC)

## *Less Restrictive Changes (L)*

L.1 Unit 2 only. *(Category 7 – Relaxation Of Surveillance Frequency)* CTS surveillance 4.9.9 requires testing the containment purge and exhaust isolation valve actuation (by radiation monitor and manual) every 7 days. ITS 3.3.6 specifies the requirements for the manual initiation capability for the containment purge and exhaust valves. The corresponding ITS surveillance (SR 3.3.6.3) requires that the manual isolation capability of the containment purge and exhaust valves be verified every 18 months by a Trip Actuating Device Operational Test (TADOT). The CTS is revised to conform to the ITS. This changes the CTS manual actuation verification surveillance interval from every 7 days to once per 18 months. The requirements for automatic valve actuation on high radiation and the valve closing time are retained in ITS 3.9.3. Changes to those surveillance requirements are addressed in Section 3.9. This DOC is intended to address the manual instrumentation requirement for the purge and exhaust isolation valves.

The purpose of CTS surveillance 4.9.9 is to verify the required actuation of the containment purge and exhaust isolation system. The proposed change is consistent with the ITS, and revises the CTS 7-day frequency for manual valve actuation testing to once every 18 months. This change is also consistent with the standard requirements for manual actuation testing of other Engineered Safety Features Actuation System (ESFAS) components in the TS (i.e., SI, Containment Spray, Containment Isolation Phase A & B, Steam line isolation, etc.). The proposed change is acceptable considering that the 18-month frequency has proven adequate for the equally important ESFAS Functions (identified above) and considering the other existing testing that is required for the containment purge and exhaust isolation function. The other surveillance requirements that are applicable to this function are also consistent with the surveillances required for ESFAS type functions and are therefore appropriate for the containment purge and exhaust isolation function. The surveillance requirements for the purge and exhaust valve isolation capability include a 12 hour Channel Check (radiation monitors), a 92 day Channel Operation Test (radiation monitors), an 18 month Trip Actuating Device Operational Test (manual initiation), and an 18 month Channel Calibration (radiation Monitors) and a verification of automatic valve actuation and valve closure time every 18 months (in ITS 3.9.3). The replacement of the 7 day surveillance frequency with an 18 month requirement for the manual actuation testing of the containment purge and exhaust isolation function continues to adequately verify the manual capability of the containment purge and exhaust valves. The instrumentation and actuation surveillance requirements applicable to this system adequately verify the operability of containment purge and exhaust system isolation function in a manner and frequency consistent with other equally important ESFAS functions.

This change is designated as less restrictive because the surveillance will be performed less frequently under the ITS than under the CTS.

L.2 Unit 2 only. *(Category 4 – Relaxation of Required Action)* CTS 3.3.3.1 Action a states "With a radiation monitoring channel alarm/trip setpoint exceeding the value shown in Table 3.3-6, adjust the setpoint to within the limit within 4 hours or declare the channel inoperable." CTS Action b states "With one or more radiation monitoring channels inoperable, take the ACTION shown in Table 3.3-6." CTS Table 3.3-6 refers the user to Specification 3.9.9 for the appropriate Action. The CTS 3.9.9 Action requires the purge and exhaust penetrations to be isolated. The corresponding ITS LCO 3.3.6 Condition A states "One radiation monitoring channel inoperable." Required Action A.1 states "Restore the affected channel to OPERABLE status," with a Completion Time of 4 hours. If ITS Required Action A.1 is not met, or two radiation monitor channels are inoperable, ITS Required Action B.1 and B.2 required that the affected penetrations be isolated or fuel movement involving recently irradiated fuel be suspended immediately. The CTS is revised to conform to the ITS. This changes the CTS by allowing a radiation monitoring channel to be inoperable for any reason up to 4 hours (ITS Action A.1) before the affected penetrations must be isolated or fuel movement involving recently irradiated fuel must be suspended (ITS Actions B.1 and B.2).

The purpose of ITS Action A is to allow 4 hours to repair an inoperable radiation monitoring channel for any reason. The CTS allows 4 hours to adjust a setpoint to within the required limit. The proposed change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing a reasonable time to repair the inoperable equipment. The Required Actions are consistent with safe operation under the specified Condition, considering the operable status of the other containment purge and exhaust radiation monitor channel. The remaining operable radiation monitor channel continues to provide assurance the purge and exhaust penetrations will be isolated when required. The proposed change provides a completion time sufficiently short for continued safe operation without single failure protection considering the low probability of a design basis accident occurring during the completion time that would require both radiation monitors operable. In addition, the proposed change continues to assure immediate Action is taken to isolate the affected penetrations or suspend fuel movement involving recently irradiated fuel if two radiation monitors are inoperable. As such, the proposed change continues to assure the plant is operated in a safe manner. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.3 Unit 2 only. *(Category 7 – Relaxation Of Surveillance Frequency)* Unit 2 CTS Surveillance Requirement 4.9.9, in parts, states "The Containment Purge and Exhaust isolation system shall be demonstrated OPERABLE at least once per 7 days by verifying that containment Purge and Exhaust isolation occurs on manual initiation." ITS Table 3.3.6 specifies the Manual Initiation Function is required to be OPERABLE and SR 3.3.6.3 is required to be performed. ITS SR 3.3.6.3 states "Perform Trip Actuating Device Operational Test (TADOT) every 18 months. The TADOT is performed to ensure the manual initiation will perform the intended Function. A Note modifies the requirement. The Note states "Verification of setpoint is not required." This changes the CTS by decreasing the frequency of the required testing from 7 days to 18 months.

The purpose of ITS SR 3.3.6.3 is to provide adequate testing of the containment purge and exhaust manual initiation and that each channel can perform its design function. This change is acceptable because the new Surveillance Frequency provides an acceptable level of testing to ensure equipment operability and reliability. This based on the simple and reliable circuits associated with the manual initiation instrument functions. The requirement to perform a TADOT every 18 months on the manual initiation function is consistent with the requirements applicable to all other manual initiation functions in the TS. For example, the 18-month test frequency is specified for the manual reactor trip and manual SI Functions. As such, this frequency of testing is consistent with the standards applied to all safety critical manual functions in the TS and has been shown by industry experience to be adequate to verify the operability of manual switch functions. The modification of the requirement that the verification of setpoint is not required is acceptable because there is no setpoint associated with this switch. This change is designated as less restrictive because Surveillance Requirements will be performed less frequently under the ITS than under the CTS.

L.4 Unit 2 only. *(Category 7 – Relaxation Of Surveillance Frequency)* CTS Table 4.3-3 specifies the surveillance requirements for the radiation monitor channels. CTS Table 4.3-3 specifies that a Channel Functional Test (CFT) be performed on a monthly frequency. The corresponding ITS surveillance requirement (ITS SR 3.3.6.2) states "Perform CHANNEL OPERATIONAL TEST (COT)," every 92 days. The difference between the CTS CFT and ITS COT is addressed in the markups and DOCs associated with the defined test terms in Section 1.0 of the TS. The CTS surveillance is revised to be consistent with the ITS. This changes the CTS by decreasing the frequency of the required testing from monthly to 92 days.

The proposed change is acceptable because the new frequency is adequate to confirm the instrumentation operability and to ensure equipment reliability. The proposed change introduces a test frequency for this surveillance consistent with the frequency for this surveillance used to confirm the operability of more complicated and safety significant reactor protection and ESFAS instrument channels. The proposed test frequency has been shown to be adequate to routinely confirm the operability of reactor protection and ESFAS instrument channels. As such, the proposed change will also provide adequate assurance the affected radiation monitoring channels are maintained operable similar to the reactor protection and ESFAS instrument channels currently tested at this frequency. In addition, the proposed change is acceptable based on the recommendations of NUREG-1366, Improvements to Technical Specifications Surveillance Requirements, 12/1/92. In NUREG-1366, the NRC evaluated the surveillance testing performed on various plant equipment and recommended certain changes. Extending the surveillance interval for testing radiation monitoring channels from monthly to quarterly was one of the specific recommendations in NUREG-1366. This change is designated as less restrictive because Surveillance Requirements will be performed less frequently under the ITS than under the CTS.

## *More Restrictive Changes (M)*

M.1 Unit 2 only. CTS LCO 3.9.9 Action states "close each of the purge and exhaust penetrations providing direct access from the containment atmosphere to the outside atmosphere." ITS Required Action B.1 states "Place and maintain containment purge and exhaust valves in closed position." The Completion Time for ITS Required Action B.1 is immediate. The CTS is revised to conform to the ITS. *This changes the CTS Action by specifying an immediate Completion Time.*

The ITS and CTS Actions accomplish the same end (i.e., containment purge and exhaust system isolation). However, the ITS Action has a specific immediate completion time. Although the CTS Action may be interpreted to be an immediate Action, the proposed change removes the need for interpretation and includes a specific completion time not previously stated in the CTS requirement. The proposed change is acceptable because it continues to assure the required action is completed in a timely fashion. The proposed change provides additional emphasis on the importance of isolating containment penetrations with direct access to the outside atmosphere when necessary. As such the proposed change does not adversely affect the safe operation of the plant. The proposed change is designated more restrictive because the ITS Action includes a specific and immediate completion time that is not part of the CTS Actions.

M.2 Unit 2 only. CTS 3.3.3.1 Action b states, "With one or more radiation monitoring channels inoperable, take the ACTION shown in Table 3.3-6. CTS Table 3.3-6 specifies Action 22 be taken. CTS Table 3.3-6 Action 22 requires the action specified in CTS 3.9.9 to be applied. The Action in CTS 3.9.9 requires the containment purge and exhaust penetrations to be isolated. The corresponding ITS Action Condition B requires that the containment purge and exhaust penetrations be isolated immediately. The CTS is revised to conform to the ITS. *This changes the CTS Action by specifying an immediate Completion Time.*

The ITS and CTS Actions accomplish the same end (i.e., containment purge and exhaust system isolation). However, the ITS Action has a specific immediate completion time. Although the CTS Action may be interpreted to be an immediate Action, the proposed change removes the need for interpretation and includes a specific completion time not previously stated in the CTS requirement. The proposed change is acceptable because it continues to assure the required action is completed in a timely fashion. The proposed change provides additional emphasis on the importance of isolating containment penetrations with direct access to the outside atmosphere when necessary. As such the proposed change does not adversely affect the safe operation of the plant. The proposed change is designated more restrictive because the ITS Action includes a specific and immediate completion time that is not part of the CTS Actions.

## *Removed Detail Changes (LA)*

LA.1 Unit 2 only. *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Tables 3.3-6 and 4.3-3 specify the requirements for the radiation monitors associated with the containment purge and exhaust isolation system. The CTS Tables also describe the radiation monitors as "(Xe-133)" and "(2HVR-RQ104A & B)" and include the measurement range of the monitors. The corresponding ITS requirements do not contain this descriptive design information. The CTS is revised to conform to the ITS. This changes the CTS by moving the description of the monitors (Xe-133) and (2HVR-RQ104A & B) and the measurement range from the TS to the Bases associated with ITS 3.3.6.

The removal of these details, which are related to system design and description, from the TS is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The TS retain the requirement for each of these instruments to be operable in the specified Modes with the required setpoint to perform their required function. Any change to the individual radiation instrument is addressed by a separate discussion of change. This change addresses the movement of the instrument description and measurement range from the TS to the associated ITS Bases. Also, this change is acceptable because the design description information will be retained within the ITS bases and changes to the ITS Bases are controlled by the TS Bases Control Program specified in the Administrative Controls Section of the TS. This program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because design description detail is being removed from the TS.

## *Administrative Changes (A)*

A.1 In the conversion of the Beaver Valley Power Station current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering or order, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

Due to the large number of such changes, A.1 changes may not always be marked on each CTS page. Marked or unmarked, all A.1 changes are identified by a single annotation of A.1 at the top of the first page of each CTS. These changes include all non-technical modifications of requirements to provide consistency with the ISTS, including all significant format changes made to update the older NUREG-0452 Technical Specification presentation to the ISTS format. This type of change is also associated with the movement of requirements within the Technical Specifications and with changes made to the presentation of Technical Specifications requirements to combine the Unit 1 and 2 Technical Specifications into one document and highlight the differences between the Unit 1 and 2 requirements. These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS requirements.

A.2 Unit 2 only. Unit 2 CTS 3.9.9 contains the requirements for the Containment Purge and Exhaust Isolation System. These requirements address the manual and automatic (on high radiation) isolation capability of the system. CTS 3.3.3.1, "Radiation Monitors" contains the requirements for the radiation monitors associated with the Containment Purge and Exhaust Isolation System. ITS 3.3.6 consolidates the instrument requirements for the Containment Purge and Exhaust Isolation System (from CTS 3.9.9 and CTS 3.3.3.1) into a single Instrumentation TS. The ITS uses a Table (3.3.6-1) to list the required instrument channels and applicable surveillance requirements. The CTS is revised to conform to the ITS. This changes the CTS by consolidating the instrumentation requirements for the Containment Purge and Exhaust Isolation System into a single instrumentation TS (ITS 3.3.6). The requirement for manual initiation channels previously addressed in the CTS surveillance 4.9.9 is itemized in proposed ITS Table 3.3.6-1 as part of the required isolation instrumentation. The technical changes to these requirements are addressed by other DOCs referenced from the CTS markups showing the changes. This DOC is only intended to address the re-organization of the Unit 2 CTS requirements. The corresponding Unit 1 requirements are addressed in the markup of the Unit 1 CTS 3.9.9 and 3.3.3.1 in DOC R.1.

The proposed change is acceptable because it re-organizes the CTS requirements for Containment Purge and Exhaust Isolation instruments (manual and radiation monitoring channels) into a single instrumentation TS consistent with the presentation of these requirements in the ITS. The proposed change provides a line item requirement for manual instrumentation on ITS Table 3.3.6-1 instead of only addressing the requirement for this instrumentation in CTS surveillance 4.9.9. The line item requirement for manual initiation is specified on ITS Table 3.3.6-1 as one channel per valve consistent with the BVPS design of this manual function (i.e., there is no system level manual actuation for these valves). The proposed change to the manual initiation requirement improves the clarity of these requirements and makes the presentation of these requirements more consistent with the presentation of other instrument requirements. The re-organization of the CTS requirements does not introduce a technical change and only represents a change in the format and presentation of the CTS requirements. As such, the proposed change is designated administrative.

A.3 Unit 2 only. Unit 2 CTS 3.9.9 (ITS 3.3.6) is revised by the designation that the specification is applicable to Unit 2 only. This change affects both the CTS and ITS versions of this specification. The proposed change is necessary due to the design and licensing bases differences between BVPS Unit 1 and 2.

The proposed change is acceptable because BVPS Unit 1 will not have corresponding TS requirements in the ITS. Unit 1 can not rely on isolation of the Containment Purge and Exhaust System to mitigate the consequences of a fuel handling accident that requires isolation or filtration. Unit 1 must rely on filtration of the Containment Purge and Exhaust System effluent when necessary to mitigate the consequences of a fuel handling accident. See DOC R.1 associated with Unit 1 CTS 3.9.9 for more detail. As the applicable technical differences between Unit 1 and 2 CTS 3.9.9 are discussed in DOC R.1 associated with Unit 1 CTS 3.9.9, this change merely documents the Unit specific difference and is, therefore, designated administrative.

A.4 Unit 2 only. The Action for CTS 3.9.9 states in part, "With the Containment Purge and Exhaust isolation system inoperable...." The corresponding ITS 3.3.6 Action Condition specifies the following, " One or more manual channels inoperable or two radiation monitoring channels inoperable or Required Action and associated

Completion Time for Condition A not met." The CTS Action is revised to be consistent with the ITS Action Condition B. This changes the CTS Action by specifying individual Action Conditions consistent with the instrumentation addressed by the new ITS 3.3.6.

The proposed change combines the Containment Purge and Exhaust system radiation monitor instrumentation requirements (CTS 3.3.3.1) with the CTS 3.9.9 requirement for the manual actuation of the Containment Purge and Exhaust valves. The proposed change is necessary to provide Action Conditions that address all the associated instrumentation. The proposed change is acceptable because it is necessary to clearly address all the Containment Purge and Exhaust system instrumentation in the ISTS format. Other changes to the CTS manual and radiation monitor Action requirements are addressed separately by the individual DOC associated with each change. This DOC only addresses the grouping of the instrumentation requirements into a common TS and Action Condition. The reorganization of the CTS requirements into a single Action Condition does not introduce a technical change to the CTS requirements and results in a TS that is more consistent with the ISTS. The proposed change is designated Administrative because it reformats the CTS requirements to accommodate the combination of requirements into a single TS.

A.5 Unit 2 only. CTS 3.9.9 Action states, in part, "The provisions of Specification 3.0.3 are not applicable." The corresponding ITS LCO 3.3.6 Actions do not include a provision stating that Specification 3.0.3 is not applicable. The CTS is revised to conform to the ITS. This changes the CTS Actions by deleting the provision that states the exception to LCO 3.0.3.

ITS LCO 3.3.6 Applicable states "During movement of recently irradiated fuel assemblies within the containment and during movement of fuel assemblies over recently irradiated fuel assemblies within the containment." The movement of fuel assemblies within containment can only occur in MODE 6. The ITS specification 3.0.3 contains a provision that 3.0.3 does not apply in Modes 5 and 6. Therefore, the CTS 3.9.9 exception to LCO 3.0.3 is not required and is deleted. The proposed change is acceptable because the ITS Specification 3.0.3 contains a provision that excepts its requirements in Modes 5 and 6 such that individual exception statements in each TS are not required. This change is designated as administrative because the technical requirements of the specifications have not changed.

A.6 Unit 2 only. CTS 3.9.9 Action requires the purge and exhaust system penetrations to be isolated when the isolation system is inoperable. The corresponding ITS 3.3.6 Actions offer an alternative to isolating the penetrations. ITS 3.3.6 Required Action B.2 allows the Required Actions of ITS 3.9.3 to be applied in lieu of isolating the affected penetrations. The alternate Action provided by ITS 3.9.3 requires that fuel movement involving recently irradiated fuel be suspended immediately. The CTS Actions are revised to conform to the ITS Actions. This changes the CTS Actions by adding the alternate Action to suspend fuel movement involving recently irradiated fuel immediately.

The applicability of CTS 3.9.9 is during fuel movement involving recently irradiated fuel. During this plant condition the purge and exhaust isolation capability of CTS 3.9.9 is required operable. If no movement of fuel involving recently irradiated fuel is taking place the isolation functions specified in CTS 3.9.9 are not required to be operable. Although unstated in the CTS, suspending the movement of fuel involving recently irradiated fuel is always an option for the plant staff conducting such operations. The suspension of this operation is not prohibited by the CTS. Therefore, the proposed change which adds this option to the Actions is considered a clarification that does not introduce a new alternative to the existing Actions. The proposed change is acceptable because it only clarifies the existing option to exit the applicability of the TS. The proposed change is designated administrative because it has no technical impact on the CTS requirements.

A.7 Unit 2 only. CTS surveillance 4.9.9 requires, in part, the verification of containment purge and exhaust isolation by manual actuation. The corresponding ITS surveillance SR 3.3.6.3 specifies a Trip Actuating Device Operational Test (TADOT) instrument test for the manual action verification. The ITS TADOT SR includes a note that states, "verification of setpoint is not required." The CTS requirement for manual actuation verification is revised consistent with the ITS SR 3.3.6.3. This changes the CTS by specifying the defined (in Section 1.0 of the ITS) instrumentation test requirement (i.e., the TADOT) for the required manual actuation test. In addition, the proposed change includes the ITS SR Note excepting the verification of a setpoint in the surveillance.

The proposed change implements the standard ISTS surveillance for manual hand switches (the TADOT). In the ISTS, the requirements for manual actuation of systems and components is included in the instrumentation Specifications and assigned the TADOT surveillance. The TADOT continues to assure the manual operation of the containment purge and exhaust valves is adequately verified. The Note excepting the verification of setpoints is a necessary clarification because the TADOT defined test term requires setpoint verification and manual switches do not have setpoints. The use of this note is also a standard format convention of the ISTS when the instrument being tested does not have a setpoint or setpoint verification is not required for other reasons. As such, the proposed change is acceptable because it does not change the technical requirements of the CTS and is necessary to conform to the ISTS presentation of the manual switch surveillance requirements. The proposed change is designated administrative because it does not introduce technical changes to the CTS surveillance.

A.8 Unit 2 only. CTS 3.9.9 contains the requirements for the containment purge and exhaust isolation system. The CTS surveillance 4.9.9 contains requirements to verify the required valve actuations. CTS 3.3.3.1 contains the requirements for the radiation monitors associated with the containment purge and exhaust isolation system. The corresponding ITS 3.3.6 contains a more complete set of containment purge and exhaust isolation system requirements. ITS 3.3.6 includes the manual valve actuation requirement as well as the requirements for the radiation monitors associated with the containment purge and exhaust isolation system. The additional radiation monitor requirements include the Channel Check, Channel Operational Test, and Channel Calibration surveillance requirements associated with the radiation monitors. CTS 3.9.9 is revised to incorporate the associated radiation monitor surveillance requirements consistent with ITS 3.3.6. This DOC addresses the addition of the radiation monitor surveillance requirements into a common containment purge and exhaust isolation system TS. Changes to the surveillance requirements are addressed in the DOCs associated with CTS 3.3.3.1.

The proposed change re-organizes the surveillance requirements associated with the containment purge and exhaust system into a common TS. The proposed change is acceptable because re-organizing the CTS requirements into a common TS does not introduce a technical change to the CTS requirements and is necessary to conform to the presentation of these requirements in the ISTS. The proposed change provides a clear set of related requirements in a single TS. The proposed change is designated administrative because it does not introduce a technical change to the CTS.

A.9 Unit 2 only. CTS LCO 3.3.3.1 states "The radiation monitoring instrumentation channels shown in Table 3.3-6 shall be OPERABLE with their alarm/trip setpoints within the specified limits." CTS Table 3.3-6 requires for noble gas and effluent process monitor instrument for containment purge exhaust to be OPERABLE with 2 channels with a trip setpoint listed. The corresponding ITS LCO 3.3.6 states "The Containment Purge and Exhaust Isolation instrumentation for each Function in Table 3.3.6-1 shall be OPERABLE." ITS Table 3.3.6-1 requires the Containment Radiation Monitor to be OPERABLE with 2 required channels and lists the setpoint for the required instruments. The CTS is revised to conform to the ITS. This changes the CTS by re-organizing the containment purge and exhaust isolation instrumentation into a single TS (ITS 3.3.6).

This change is acceptable because the CTS requirements are translated into the ITS format and presentation without introducing a technical change to the CTS requirements. The proposed change is necessary because the ISTS does not have a separate Radiation Monitoring specification. The ITS continues to require the Containment Purge and Exhaust radiation monitoring instrumentation to be OPERABLE with the same 2 required channels, the same setpoint, and the same applicability. This change is designated as administrative because the technical requirements of the specifications have not changed.

A.10 Unit 2 only. CTS 3.3.3.1 Action c states, "The provisions of Specification 3.0.3 are not applicable." The corresponding ITS LCO 3.3.6 Actions do not include a provision stating that Specification 3.0.3 is not applicable. The CTS is revised to conform to the ITS. This changes the CTS Actions by deleting the provision that states the exception to LCO 3.0.3.

ITS LCO 3.3.6 Applicable states "During movement of recently irradiated fuel assemblies within the containment and during movement of fuel assemblies over recently irradiated fuel assemblies within the containment." The movement of fuel assemblies within containment can only occur in Mode 6. The ITS specification 3.0.3 contains a provision that 3.0.3 does not apply in Modes 5 and 6. Therefore, the CTS 3.3.3.1 exception to LCO 3.0.3 is not required and is deleted. The proposed change is acceptable because the ITS Specification 3.0.3 contains a provision that excepts its requirements in Modes 5 and 6 such that individual exception statements in each TS are not required. This change is designated as administrative because the technical requirements of the specifications have not changed.

A.11 Unit 2 only. CTS surveillance 4.3.3.1 is applicable to the containment purge and exhaust isolation radiation monitor channels. The CTS surveillance states, "Each radiation monitoring instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the modes and at the frequencies shown in Table 4.3-3." The corresponding ITS surveillance requirements consist of a separate surveillance number for each requirement listed in CTS 4.3.3.1 (i.e., SR 3.3.6.1 & SR 3.3.6.2 & SR 3.3.6.4). ITS Table 3.3-6 continues to identify the required surveillance for each instrument function (by individual number) similar to CTS Table 4.3-3 which uses the CTS defined test terms for the surveillance. The CTS is revised to conform to the ITS. This changes the CTS by reformatting the presentation of the surveillance requirements applicable to the containment purge and exhaust isolation radiation monitoring channels. This DOC is intended to address the reformat of the CTS surveillances. Technical Changes to the CTS surveillances are identified in the markups and DOCs associated with CTS Table 4.3-3 which specifies the individual surveillance requirements.

The proposed change is acceptable because it maintains the CTS requirements in the ITS format. The proposed change continues to assure the required surveillances are performed to confirm the operability of the associated radiation monitor channels. As such, the proposed change does not adversely affect the safe operation of the plant and is necessary to conform to the ITS format and presentation of these requirements. The proposed change is designated administrative because it does not introduce a technical change to the CTS requirements.

A.12 Unit 2 only. The CTS Table 3.3-6 table heading titled "Minimum Channels Operable" is revised to be "Required Channels" consistent with the corresponding ISTS Table 3.3.6-1 Table headings. In addition, the Minimum Channels Operable column of CTS Table 3.3-6 is deleted consistent with the content of the corresponding ISTS Table 3.3.6-1.

The proposed change is acceptable because the revisions described above do not result in technical changes to the number of instrument channels required operable or the applicable Actions when the required channels are not met. All Actions for an inoperable instrument channel in the ISTS are based on the Required Channels specified for the affected function. The new ISTS Action Conditions specify the appropriate action when one or more "Required" instrument channels are inoperable. The minimum channels column used in the

CTS to identify the number of operable channels for which continued operation is permissible is no longer used or required in the TS. The ISTS Actions encompass the concept of the minimum required channels, i.e., the Actions would apply and if not met, the plant would be required to be placed in a Mode or Condition outside the Applicable Mode. The ISTS Actions accomplish this without a specific reference to the minimum channels operable. As such, the proposed change described above does not introduce a technical change to the CTS requirements. In addition, any technical changes to the CTS Actions associated with the affected instrument functions are identified in the markup of those Actions and addressed in the DOCs associated with the changes to the CTS Actions. This DOC is intended to address the reformat of the CTS Table 3.3-6 to conform to the corresponding ISTS Table 3.3.6-1. Therefore, this change is designated administrative.

A.13 Unit 2 only. CTS Table 4.3-3 contains the surveillance requirements for the Containment Purge and Exhaust isolation Radiation Monitors. CTS Table 4.3-3 specifies a Channel Functional Test for the Radiation Monitors. In place of the Channel Functional Test ITS SR 3.3.6.2 specifies a Channel Operational Test (COT). The CTS is revised to replace the single Channel Functional Test requirement with the new ISTS defined test requirement (i.e., COT). The CTS Channel Functional Test as well as the new ISTS COT are defined terms specified in Section 1.0 of the TS. The addition of the new ISTS defined terms for surveillance testing and the technical changes to the CTS Channel Functional Test defined term are addressed in the changes made to TS Section 1.0, Definitions. Any technical changes to the requirements for individual radiation monitors will be addressed in the detailed markup of those requirements in CTS Table 4.3-3. This DOC is intended to address the replacement of the Channel Functional Test defined term in Table 4.3-3 with the new ISTS defined term "COT".

The proposed change is acceptable because the radiation monitors will continue to be tested in the same manner as before. The proposed change does not introduce a technical change to the method by which the radiation monitors are currently tested. The proposed change only results in the use of the ISTS specific defined terms for surveillance testing. As such, the radiation monitors continue to be tested in a similar manner as before but the testing being performed is more consistent with the TS defined terms being used to specify the required testing. The proposed change is designated administrative because it does not introduce technical changes to the surveillance testing currently performed for each instrument Function.

A.14 Unit 2 only. CTS 3.9.9 Action specifies that "With the containment purge and exhaust system inoperable...." The corresponding ITS 3.3.6 Actions are based on the individual instrument Functions associated with the Containment Purge and Exhaust isolation system. In addition, the ITS Actions are modified by a Note, which states "Separate Condition entry is allowed for each Function." The CTS is revised to be consistent with the ISTS. This changes the CTS by the addition of the ISTS note allowing separate condition entry for each inoperable instrument Function.

The CTS requirements for the instrument Functions associated with the containment purge and exhaust isolation system are currently located in two different TS (CTS 3.9.9 for manual initiation and CTS 3.3.3.1 for radiation monitors). As such, the CTS Actions for the different containment purge and exhaust system instrumentation are applied separately in each of the CTS that address this instrumentation. The ISTS consolidates the different containment purge and exhaust isolation instrumentation into a single TS (ITS 3.3.6). As such, the addition of the ISTS note is consistent with how the CTS Action is currently applied. Therefore, the proposed change is acceptable because it retains the CTS allowance to apply Actions separately to each of the instrument Functions associated with the containment purge and exhaust isolation system. As such, the addition of the ISTS Note is considered a clarification of the CTS Action requirements that does not modify the technical requirements of the CTS. The proposed change is made to adopt the format conventions of the ISTS for Actions that allow for multiple inoperable functions. This change is designated as administrative because the technical requirements of the specifications have not changed.

## *Relocated (R)*

R.1 Unit 1 only.

Unit 1 CTS 3/4.9.9 Containment Purge and Exhaust Isolation System

Unit 1 CTS 3/4.3.3.1 Radiation Monitoring, Table 3.3-6 and Table 4.3-3 Instrument 1.b.i Purge & Exhaust Isolation (RM-1VS 104 A & B).

The above listed CTS LCOs contain the requirements for the automatic and manual isolation of the Containment Purge and Exhaust System. The radiation monitors specified in CTS 3/4.3.3.3.1 function to automatically isolate the Containment Purge and Exhaust Valves on high radiation. The Unit 1 CTS LCOs are required to be met during movement of recently irradiated fuel assemblies within the containment and during movement of fuel assemblies over recently irradiated fuel assemblies within the containment.

The proposed ITS 3.3.6, "Containment Purge and Exhaust Isolation Instrumentation" does not contain requirements for the Unit 1 automatic or manual Purge and Exhaust Isolation. ITS 3.3.6 is only applicable to Unit 2. The CTS is revised to conform to the ITS. This changes the Unit 1 CTS Purge and Exhaust system requirements for automatic isolation on high radiation and manual isolation by moving the CTS requirements to the Unit 1 Licensing Requirements Manual (LRM).

The current BVPS design basis fuel handling accident of record (for both units) does not credit any automatic actuation to mitigate a fuel handling accident when moving fuel assemblies that are not recently irradiated or fuel over assemblies that are not recently irradiated. Recently irradiated fuel is defined in the TS Bases as "...fuel that has occupied part of a critical reactor core within the previous 100 hours." Although BVPS does not currently have a safety analysis that supports moving recently irradiated fuel assemblies, TS requirements have been retained to address the condition of moving recently irradiated fuel assemblies. The retained TS requirements applicable when moving recently irradiated fuel or fuel assemblies over recently irradiated fuel assemblies include Containment Purge and Exhaust System isolation for Unit 2 and Containment Purge and

Exhaust System effluent filtration for Unit 1. Proposed ITS 3.9.3, "Containment Penetrations" contains these BVPS unit specific requirements for the Containment Purge and Exhaust System. The current fuel handling accident analysis and CTS requirements for moving recently irradiated fuel were approved by the NRC in Amendments 241 for Unit 1and 121 for Unit 2 (dated 8/30/01).

The relocation of the Unit 1 requirements for Containment Purge and Exhaust isolation to the LRM is acceptable because BVPS Unit 1 can not credit Containment Purge and Exhaust System isolation to mitigate the consequences of a fuel handling accident in containment. Instead, Unit 1 must rely on filtration of the effluent by an operable train of the Supplemental Leakage Collection and Release System (SLCRS) when necessary to mitigate the consequences of a fuel handling accident inside containment. Unit 1 must rely on filtration of the effluent instead of isolation because the Containment Purge and Exhaust System ductwork where the radiation monitors are located is not designed to withstand a seismic event. Although the radiation monitors provide an isolation signal to the purge and exhaust valves to close, no credit for the isolation signal may be taken in the Unit 1 design basis fuel handling accident. As stated in the NRC Safety Evaluation Report (SER) for Unit 1 Amendment 23 dated 12/12/79 (which added the TS requirement for the containment air to be exhausted through SLCRS); "However, since the purge exhaust ductwork inside the containment containing the radiation monitors is non-seismic we have made dose calculations assuming the ductwork and monitors are damaged during a seismic event. In such an event we have assumed there is no containment isolation". Therefore, based on the SER applicable to the Unit 1 Containment Purge and Exhaust System, any Unit 1 safety analysis performed to support the movement of recently irradiated fuel would credit filtration instead of isolation. The proposed ITS reflect the Unit 1 Containment Purge and Exhaust System specific design and licensing bases.

In addition, the radiation monitors associated with the Unit 1Containment Purge and Exhaust Isolation System that are proposed for relocation do not:

1. Provide an automatic initiation function assumed in the safety analysis for any design basis accident described in Unit 1 UFSAR Chapter 14.

2. Provide indication or alarm functions relied on by operators to take manual actions that are assumed in the safety analyses for any design basis accident described in Unit 1 UFSAR Chapter 14.

3. Provide indication that is used to detect and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary, or

4. Monitor variables that have been identified as Regulatory Guide 1.97 Type A or Category I variables in the BVPS Unit 1 responses to Regulatory Guide 1.97. The BVPS Unit 1 Regulatory Guide 1.97 variable Type and Category are identified in the Unit 1 response to Generic Letter 82-33, Regulatory Guide 1.97, Revision 2, Supplemental Report, transmitted to the NRC by letter dated October 13, 1986.

The four policy statement criteria contained in 10 CFR 50.36(c)(2)(ii) for determining which regulatory requirements and operating restrictions should be included in the TS are as follows:

Criterion 1. Installed instrumentation that is used to detect and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

Criterion 2. A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

Criterion 3. A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

Criterion 4. A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

Criteria 1 and 2 are not applicable to the Containment Purge and Exhaust Isolation System or the associated radiation monitors. Based on the design and licensing bases for the Unit 1 Containment Purge and Exhaust System and associated radiation monitors discussed above, Criterion 3 is not met either. The proposed Unit 1 ITS rely on filtration of the Containment Purge and Exhaust System effluent not system isolation as described in the NRC SER for Unit 1 Amendment 23 dated 12/12/79. Nor is the isolation function of the Containment Purge and Exhaust Isolation System and associated radiation monitors during refueling operation modeled in the BVPS PRA as documented in the Individual Plant Examinations (IPE) and the associated PRA Update Reports for both units. In addition, the actuation instrumentation for this isolation function is not significant to risk because it is not involved in any accident initiation sequences. As such, the Containment Purge and Exhaust Isolation System and associated radiation monitors were not identified as being a "constraint of prime importance in limiting the likelihood or severity of accident sequences that are commonly found to dominate risk". Therefore, these CTS requirements have not been shown by risk to be significant to public health and safety. Therefore, Criterion 4 is not met.

Consistent with the guidance of NRC Administrative Letter 96-04, "Efficient Adoption of Improved Standard Technical Specifications," BVPS proposes to relocate TS and associated Bases that do not meet any of the four policy statement criteria to the LRM. The LRM is referenced in the BVPS Unit 1 UFSAR. Relocation of TS requirements to the LRM is acceptable as changes to these relocated documents will be adequately controlled by 10 CFR 50.59. The provisions of 10 CFR 50.59 establish adequate controls for material removed from the TS, including record retention and reporting requirements. The provisions of 10 CFR 50.59 assure future changes to the relocated material will be consistent with safe plant operation.

# ITS 3.3.7 Control Room Emergency Ventilation System (CREVS) Instrumentation

## CTS 3.3.3.1 Radiation Monitoring Instrumentation

## DISCUSSION OF CHANGE (DOC)

### *Less Restrictive Changes (L)*

L.1 *(Category 7 – Relaxation Of Surveillance Frequency)* CTS LCO 3.3.3.1, Table 4.3-3 lists surveillance requirements for the control room area radiation monitors. The CTS specifies a Channel Functional Test (CFT) for this Function that must be performed each month. ITS LCO 3.3.7, Table 3.3.7-1 specifies the required surveillances for the CREVS actuation instrumentation. Table 3.3.7-1 specifies SR 3.3.7.2 for the control room area radiation monitors. SR 3.3.7.2 requires that a Channel Operational Test (COT) be performed every 92 days. The difference between the CTS CFT and ITS COT is addressed in the markups and DOCs associated with the defined test terms in Section 1.0 of the TS. The CTS surveillance is revised to be consistent with the ITS. This changes the CTS by decreasing the frequency of the required testing from monthly to 92 days.

The proposed change is acceptable because the new frequency is adequate to confirm the instrumentation operability and to ensure equipment reliability. The proposed change introduces a test frequency for this surveillance consistent with the frequency for this surveillance used to confirm the operability of more complicated and safety significant reactor protection and ESFAS instrument channels. The proposed test frequency has been shown to be adequate to routinely confirm the operability of reactor protection and ESFAS instrument channels. As such, the proposed change will also provide adequate assurance the affected radiation monitoring channels are maintained operable similar to the reactor protection and ESFAS instrument channels currently tested at this frequency. In addition, the proposed change is acceptable based on the recommendations of NUREG-1366, Improvements to Technical Specifications Surveillance Requirements, 12/1/92. In NUREG-1366, the NRC evaluated the surveillance testing performed on various plant equipment and recommended certain changes. Extending the surveillance interval for testing radiation monitoring channels from monthly to quarterly was one of the specific recommendations in NUREG-1366. This change is designated as less restrictive because Surveillance Requirements will be performed less frequently under the ITS than under the CTS.

L.2 Not used.

L.3 Unit 1 only. *(Category 3 - Relaxation of Completion Time and Category 4 - Relaxation of Required Action)* Unit 1 CTS 3.3.3.1 Action 41.a.2 and b.2 address the plant condition where one of the two required radiation monitors are inoperable. The CTS Actions require suspension of all operations involving movement of recently irradiated fuel assemblies and movement of fuel assemblies over recently irradiated fuel assemblies within 1 hour. The corresponding ITS 3.3.7 Action Condition A allows 7 days before Action must be taken in this condition and does not require that fuel movement be suspended. Instead, the ITS Action requires that one Control Room Emergency Ventilation System (CREVS) be placed in the emergency pressurization mode of operation. The corresponding ITS Action Condition D is only applicable if ITS Action Condition A is not met and requires that fuel movement involving recently irradiated fuel be suspended immediately. The CTS Action is revised to conform to the ITS. This changes the CTS Actions by allowing up to 7 days for Action to be taken. In addition, the CTS Action is revised from suspension of fuel movement to place one CREVS train in the emergency pressurization mode. Only if the radiation monitor is not restored to operable status or the CREVS train is not placed in service within 7 days is fuel movement required to be suspended.

The radiation monitors function to provide automatic initiation of CREVS. The radiation monitors are not assumed to operate in any BVPS design bases accident analysis. However, the radiation monitors are retained in the TS in case they are needed to support the movement of recently irradiated fuel. The applicability for the monitors is revised for the condition of fuel movement involving recently irradiated fuel.

The proposed change to increase the completion time to 7 days is acceptable because in the condition addressed by the affected CTS Actions, one of the two required radiation monitors remains operable and can provide the required CREVS initiation function. Although the actuation instrumentation is no longer single failure proof, the 7-day completion time provides an appropriate restriction on continued fuel movement in this condition. Thus, the proposed change continues to provide adequate assurance that operation in the specified condition (fuel movement) is limited and that Action will be taken to restore the inoperable monitor to operable status or that the plant is placed in a safe condition. Similarly, the ITS Action requirement to place one CREVS train inservice is also acceptable since this action will accomplish the automatic function of the radiation monitor and maintain the control room in a safe operating condition while fuel movement is in progress. Once the automatic function of the radiation monitor is accomplished, the control room atmosphere is protected from the consequences of a potential fuel handling accident and the affected radiation monitor is no longer required operable to perform this action. As such, the proposed change continues to assure the plant is operated in a safe manner consistent with the assumptions of the applicable safety analyses. The proposed change is designated less restrictive because the ITS Actions provide additional time to accomplish the action and an alternate action to the CTS requirement to suspend fuel movement.

## *More Restrictive Changes (M)*

M.1 CTS 3.3.3.1 Action "a" states, "With a radiation monitoring channel alarm/trip setpoint exceeding the value shown in Table 3.3-6, adjust the setpoint to within the limit within 4 hours or declare the channel inoperable." The CTS Action provides a 4-hour delay before a radiation monitoring channel must be declared inoperable and CTS Action "b" applied. ITS 3.3.7 does not have a corresponding Action that allows a delay before the required channel must be declared inoperable. The CTS Actions are revised to conform to the ISTS Actions. This changes the CTS by eliminating CTS Action "a" which results in radiation monitoring channels being declared inoperable upon discovery instead of 4-hours after discovery.

The proposed change is acceptable because the default Action applied after the 4-hour delay allows 7 days to restore the inoperable channel to operable status. The additional 4 hours provided by CTS Action A is not significant considering the amount of time provided by the CTS Action applicable after the 4-hours have passed (i.e., 7 days). The corresponding ITS Actions continue to allow 7 days for restoration of an inoperable channel. Therefore, elimination of the CTS Action allowing 4 additional hours does not significantly impact equipment availability, reliability, or plant safety. The proposed change simplifies the CTS Actions without significantly affecting the total time allowed for restoration of an inoperable channel. As such, the proposed change does not affect the safe operation of the plant. The proposed change is designated more restrictive because slightly less time is allowed for restoration in the ITS than in the CTS.

M.2 Unit 2 only. Unit 2 CTS Action 46 applicable when one control room area monitor is inoperable states, "With the number of OPERABLE channels one less than required by the Minimum Channels OPERABLE requirement, either restore the inoperable channel to OPERABLE status within 7 days or close the control room series normal air intake and exhaust isolation dampers." The corresponding ITS 3.3.7 Action Condition A states "One or more Functions with one channel or train inoperable. Place one CREVS train in emergency pressurization mode in 7 days." The CTS is revised to conform to the ITS. This changes the CTS Action by revising the Action to address more actuation instrument functions than just the radiation monitors. In addition, the CTS is revised to not only isolate the control room but place a CREVS train in operation to pressurize the control room with filtered air.

ITS 3.3.7 addresses all the Control Room Emergency Ventilation System (CREVS) actuation instrumentation not just the radiation monitors. ITS 3.3.7 includes requirements for the 2 trains of manual initiation and the Containment Isolation-Phase B (CIB) signal as well as the radiation monitor channels.

The proposed change revises the scope of the CTS Action to accommodate all CREVS actuation instrumentation addressed by ITS 3.3.7. The re-organization of the CREVS instrument requirements into a single specification provides a clear set of CREVS related requirements with common Actions. In addition, the proposed change requires that the CREVS be placed in the emergency pressurization mode of operation instead of simply isolating the control room ventilation system. The CTS Action only requires that the control room ventilation intake and exhaust isolation dampers be closed to prevent unfiltered air from being introduced to the control room. As such, the proposed change provides additional assurance that the integrity of the control room boundary is maintained by both isolating the control room ventilation and pressurizing the control room to minimize in-leakage into the control room pressure boundary. Thus, the proposed change is acceptable because it provides a more clear set of CREVS instrumentation requirements while also providing additional assurance the plant is operated in a safe manner consistent with the assumptions of the applicable safety analyses. Therefore, the proposed change does not adversely affect the safe operation of the plant. The proposed change is designated more restrictive as the ITS Actions are more comprehensive than the CTS Actions.

M.3 Unit 2 only. Unit 2 CTS Action 47 applicable when two radiation monitor channels are inoperable states "With no OPERABLE channels either restore one inoperable channel to OPERABLE status within 1 hour or close the control room series normal air intake and exhaust isolation dampers. The corresponding ITS Action Condition B states "One or more Functions with two channels or two trains inoperable. Place one CREVS train in the emergency pressurization mode immediately. AND Enter applicable Conditions and required Actions of LCO 3.7.10, "CREVS" for one CREVS train made inoperable by inoperable CREVS actuation instrumentation immediately." The CTS is revised to conform to the ITS. This changes the CTS Action by revising the Action to address more actuation instrument functions than just the radiation monitors. The CTS is also revised to not only isolate the control room but place a CREVS train in operation to pressurize the control room with filtered air immediately instead of within one hour. In addition, the CTS is revised to include an Action to enter the applicable plant systems specification (3.7.10) for an inoperable train of CREVS. The Action for an inoperable CREVS train in 3.7.10 allows 7 days of operation in this condition before the CREVS train must be restored to operable status (initiation instrument channel or train restored to operable status) or the plant must be placed in a condition where the affected CREVS train is no longer required operable.

ITS 3.3.7 addresses all the Control Room Emergency Ventilation System (CREVS) actuation instrumentation not just the radiation monitors. ITS 3.3.7 includes requirements for the 2 trains of manual initiation and the Containment Isolation-Phase B (CIB) signal as well as the radiation monitor channels.

The Affected Action condition (two inoperable channels or trains) represents a loss of automatic CREVS actuation from one or more CREVS initiation Functions (manual radiation monitor, or CIB) addressed by ITS 3.3.7. The proposed change revises the scope of the CTS Action to accommodate all CREVS actuation instrumentation addressed by ITS 3.3.7. The re-organization of the CREVS instrument requirements into a single specification provides a clear set of CREVS related requirements with common Actions. The proposed change also requires that the CREVS be placed in the emergency pressurization mode of operation immediately instead of simply isolating the control room ventilation system. The CTS Action only requires that the control room ventilation intake and exhaust isolation dampers be closed within an hour to prevent unfiltered air from being introduced to the control room. As such, the proposed change provides additional assurance that the integrity of the control room boundary is maintained by both isolating the control room ventilation and pressurizing the control room more expeditiously (immediately vs 1 hour) than the CTS to minimize any control room pressure boundary in-leakage. In addition, the ITS Actions require that the applicable Required Actions be entered for one CREVS train made inoperable by the actuation instrumentation. This ITS Action serves to limit plant operation in the Mode or other specified condition of the Applicability with two inoperable instrument channels or trains to 7 days. Although the ITS requires a train of CREVS is in operation to protect the control room boundary, further limiting operation to 7 days in this condition is appropriate because redundant CREVS trains with full automatic and manual initiation capability are no longer available to assure the capability to mitigate design basis accidents assuming a single failure. Thus, the proposed change is acceptable because it provides a more clear set of CREVS instrumentation requirements while also providing additional assurance the plant is operated in a safe manner consistent with the assumptions of the applicable safety analyses. Therefore, the proposed change does not adversely affect the safe operation of the plant. The proposed change is designated more restrictive as the ITS Actions are more comprehensive than the CTS Actions.

M.4 Unit 2 only. Unit 2 Actions 46 and 47 provide the requirements to be implemented when one or two required instrument channels are inoperable. The CTS Actions do not contain default requirements to follow if the specified Actions are not accomplished within the required time. The corresponding ITS 3.3.7 Actions include default Actions (Conditions C and D) that must be implemented if the Actions in ITS Conditions A and B are not met. The two ITS default Conditions address the different Applicabilities of ITS 3.3.7 (i.e., Modes 1-4 and fuel movement involving recently irradiated fuel). The ITS default Actions require the plant to be removed from the associated Applicability (i.e., be in Mode 5 or suspend fuel movement involving recently irradiated fuel). The CTS is revised to incorporate the ITS default Action Conditions C and D. This changes the CTS by providing clear Action requirements to implement if the primary Actions that address the inoperable condition are not met within the required completion time.

The ISTS typically contain default Actions in all Specifications to assure the correct Action is taken within a reasonable time to place the plant in a safe condition. The proposed change is acceptable because it assures that the plant is placed in a safe condition (outside the Mode or other specified condition of the TS Applicability) if the required Actions can not be accomplished within the specified time. As such, the proposed change provides additional assurance the plant continues to be operated in a safe manner consistent with the assumptions of the applicable safety analyses. Therefore, the proposed change does not adversely affect the safe operation of the plant. The proposed change is designated more restrictive as the ITS includes additional Actions that are not currently specified in the CTS.

M.5 CTS 3.3.3.1 contains the requirements for radiation monitors, including the monitors used to actuate the Control Room Emergency Ventilation System (CREVS). CTS 3.3.3.1 does not contain requirements for manual initiation of the CREVS. ITS 3.3.7 " CREVS Actuation Instrumentation," contains all the instrumentation requirements for the CREVS including the radiation monitors. ITS 3.3.7 also includes the requirements for the manual switches associated with each CREVS train. The CREVS manual initiation Function is applicable in MODES 1, 2, 3, and 4, and During the movement of recently irradiated fuel assemblies, or during movement of fuel assemblies over recently irradiated fuel assemblies." Two trains of manual initiation are required operable and a TADOT surveillance is assigned to the manual function. The CTS is revised to conform to the ITS. This changes the CTS by adding the requirements for the manual CREVS initiation Function to the TS.

The CREVS manual initiation Function consists of two train related switches in each unit's control room. Each switch will isolate one train of control room intake and exhaust dampers and start the preferred Unit 2 CREVS fan and align the fan to supply filtered ventilation.

The addition of the manual Function is acceptable because the manual feature is assumed by the safety analysis to be available for operator action to place the control room in the emergency pressurization mode of operation. Placing the control room in the emergency pressurization mode of operation within 30 minutes after the event will assure that dose rates in the Control Room are maintained within the required limits. Thus, the proposed change provides additional assurance the plant will be operated in a safe manner consistent with the assumptions of the safety analyses. Therefore, the proposed change does not adversely affect the safe operation of the plant. The proposed ITS requirements are consistent with the ISTS wording for this requirement. This change is designated as more restrictive because it adds additional requirements not specifically included in the CTS.

M.6 CTS LCO 3.3.3.1 states "The radiation monitoring instrumentation channels shown in Table 3.3-6 shall be OPERABLE." Table 3.3-6 lists the radiation monitors required for the Control Room Area. ITS LCO 3.3.7 states "The Control Room Emergency Ventilation System (CREVS) actuation instrumentation for each Function in Table 3.3.7-1 shall be OPERABLE." ITS Table 3.3.7-1 lists all the required CREVS instrument functions which includes the containment isolation Phase B (CIB) signal. The ITS Table 3.3.7-1 specification of the CIB actuation includes a reference to the requirements for the CIB being specified in ITS 3.3.2, ESFAS Instrumentation. The CTS is revised to conform to the ISTS. This changes the CTS by specifying an additional instrumentation actuation function for the CREVS.

ITS 3.3.7 is a system related instrumentation specification that includes all the required instrumentation for the CREVS. The CIB, although specified in ITS 3.3.2, ESFAS Instrumentation, provides an actuation of CREVS that is credited in the LOCA safety analysis. The proposed change provides a more complete listing of the required CREVS actuations in a single specification. As explained in the ITS 3.3.7 bases, if the CIB function is inoperable such that only the CREVS function is affected, the less restrictive Actions of ITS 3.3.7 would be applicable. The proposed change is acceptable because the inclusion of the CIB signal with the other credited CREVS actuation instrumentation provides a complete list of required CREVS instrumentation with a common set of Actions to assure the plant is placed in a safe condition when the required instrumentation is inoperable. Thus, the proposed change ensures the control room doses after a design basis event are maintained within the required limits. As such, the proposed change provides additional assurance the plant will be operated in a safe manner consistent with the assumptions of the safety analyses. Therefore, the proposed change does not adversely affect the safe operation of the plant. The proposed ITS requirements are consistent with the ISTS wording for this requirement. This change is designated as more restrictive because it adds additional CREVS actuation instrumentation not specifically identified in the CTS as a CREVS Actuation requirement.

M.7 CTS LCO 3.3.3.1 Surveillance Requirement 4.3.3.1 states "Each radiation monitoring instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the modes and at the frequencies shown in Table 4.3-3." The CTS does not include any requirements for the CREVS manual initiation function. ITS LCO 3.3.7 "Control Room Emergency Ventilation System (CREVS) Actuation Instrumentation," specifies the manual initiation Function and requires SR 3.3.7.3 to be performed on the manual function. The ITS SR requires a TADOT to be performed every 18 months. SR 3.3.7.3 is modified by a Note that states "Verification of setpoint is not required." This changes the CTS by adding a surveillance requirement that is not currently specified.

The addition of surveillance requirements for the manual Function is acceptable because the manual feature is assumed by the safety analysis to be available for operator action to place the control room in the emergency pressurization mode of operation. Placing the control room in the emergency pressurization mode of operation within 30 minutes after the event will assure that dose rates in the Control Room are maintained within the required limits. Thus, the proposed change provides additional assurance the manual initiation function is maintained operable and that the plant will be operated in a safe manner consistent with the assumptions of the safety analyses. Therefore, the proposed change does not adversely affect the safe operation of the plant. The proposed ITS requirements are consistent with the ISTS. This change is designated as more restrictive because it adds requirements not specifically included in the CTS.

M.8 Unit 1 only. CTS 3.3.3.1 contains the requirements for the control room radiation monitors. The Unit 1 CTS 3.3.3.1 Action 41 allows Unit 1 to take credit for the Unit 2 control room area radiation monitors when the corresponding Unit 1 control room area radiation monitors are inoperable. The corresponding Actions in proposed ITS 3.3.7 are simplified and treat each Unit equally and do not contain provisions for Unit 1 to credit the Unit 2 radiation monitors. The CTS is revised to conform to the ITS. The proposed change results in a more simplified set of Actions for Unit 1 that are consistent with the proposed Unit 2 Actions and the corresponding ISTS Actions.

The Unit 1 CTS Actions are derived from the previous design basis when the radiation monitors were credited in the safety analyses to mitigate the consequences of design basis accidents and the control room utilized air bottles to initiate control room pressurization. The pressurized air bottles could not be placed in service if the actuation instrumentation becomes inoperable because once initiated the bottles are expended and the system is inoperable for both units. The current safety analyses do not credit the radiation monitors in any design basis accident. In addition the control room is now pressurized by a fan system (CREVS) and does not use bottled air. A fan system may be placed in service if the actuation instrumentation is inoperable and eliminate the need for the affected actuation instrument. As such, the proposed applicable Mode where the radiation monitors are required operable is during fuel movement involving recently irradiated fuel. Currently fuel movement involving recently irradiated fuel is prohibited. The control room area radiation monitors are retained in the TS to support fuel movement involving recently irradiated fuel if this evolution is approved in the future consistent with the ISTS requirements. In addition, the ISTS Actions for an inoperable radiation monitor being adopted in ITS 3.3.7 allow up to 7 days to restore an inoperable monitor to operable status before any remedial Action is required. If the monitor can not be restored, the ITS Actions only require that a fan system be placed in service to pressurize the control room. Therefore, the proposed ITS Actions continue to offer an acceptable level of operating flexibility in the event a radiation monitor becomes inoperable and reliance on the Unit 2 monitors for Unit 1 operation is not essential.

The Unit 1 Action 41 allowance to credit the Unit 2 radiation monitors results in a complicated set of Actions unique to Unit 1. The proposed change to eliminate this allowance and simplify the Actions is acceptable considering the changes in the control room ventilation design and safety analyses described above. The Unit 1 Actions may be simplified and made consistent with the corresponding Unit 2 Actions without a significant loss of operational flexibility. The proposed change does not adversely affect the safe operation of the plant and the resulting simplified Actions provide sufficient operational flexibility and assurance that the radiation monitors are maintained operable or the control room is placed in a safe condition. The proposed change also improves consistency between the units (human factor improvement) as well as consistency with the ISTS. The proposed change is designated more restrictive because the proposed ITS Actions are more stringent than the CTS Actions.

M.9 Unit 1 only. CTS 3.3.3.1 contains the Actions applicable when one or more control room area radiation monitors are inoperable. CTS Actions 41a) 2, 41b) 2, and 41b) 3 require that the control room be isolated from the outside atmosphere by closing the series air intake and exhaust isolation dampers. The corresponding ITS 3.3.7 Action Conditions A and B require that a CREVS train be placed in the emergency pressurization mode of operation. The emergency pressurization mode of operation includes isolation of the control room ventilation intake and exhaust ducts as well as the start of a CREVS fan aligned to provide filtered makeup air to pressurize the control room. The CTS Actions are revised to conform to the ITS Actions. This changes the CTS Actions by requiring the control room to be placed in the emergency pressurization mode of operation instead of simply being isolated.

The purpose of the Action is to compensate for inoperable automatic actuation instrumentation (i.e., control room area radiation monitor(s)). By placing the CREVS in service to pressurize the control room, the Actions accomplish the automatic function of the actuation instrumentation. Once the CREVS train is placed in service, the control room is protected from the radiological consequences of the applicable design basis accidents and the affected actuation instrumentation is no longer required operable. As such, the proposed change is acceptable because it accomplishes the required control room atmosphere protection in the same manner as the automatic initiation function. Therefore, the proposed change continues to assure the plant is operated in a safe manner consistent with the assumptions of the applicable safety analysis. The proposed change is designated more restrictive because the proposed ITS Actions are more stringent than the CTS Actions.

## ***Removed Detail Changes (LA)***

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Tables 3.3-6 and 4.3-3 specify the requirements for the radiation monitors associated with the control room emergency ventilation system (CREVS). The CTS Tables also describe the radiation monitors as "RM-1RM-218 A&B (for Unit 1) and 2RMC-RQ201 & 202 (for Unit 2)." The CTS also includes the measurement range of the monitors. The corresponding ITS requirements do not contain this descriptive design information. The CTS is revised to conform to the

ITS. This changes the CTS by moving the description of the monitors and the measurement range from the CTS to the Bases associated with ITS 3.3.7.

The removal of these details, which are related to system design and description, from the TS is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The TS retain the requirement for each of these instruments to be operable in the specified Modes with the required setpoint to perform their required function. Any change to the individual radiation instrument is addressed by a separate discussion of change. This change addresses the movement of the instrument description and measurement range from the TS to the associated ITS Bases. Also, this change is acceptable because the design description information will be retained within the ITS bases and changes to the ITS Bases are controlled by the TS Bases Control Program specified in the Administrative Controls Section of the TS. The bases control program provides for the evaluation of changes to ensure the Bases are properly controlled and that prior NRC review and approval is requested when required. This change is designated as a less restrictive removal of detail change because design description detail is being removed from the TS.

## *Administrative Changes (A)*

A.1 In the conversion of the Beaver Valley Power Station current Technical *Specifications (CTS) to the plant specific Improved Technical Specifications (ITS),* certain changes (wording preferences, editorial changes, reformatting, revised numbering or order, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

Due to the large number of such changes, A.1 changes may not always be marked on each CTS page. Marked or unmarked, all A.1 changes are identified by a single annotation of A.1 at the top of the first page of each CTS. These changes include all non-technical modifications of requirements to provide consistency with the ISTS, including all significant format changes made to update the older NUREG-0452 Technical Specification presentation to the ISTS format. This type of change is also associated with the movement of requirements within the Technical Specifications and with changes made to the presentation of Technical Specifications requirements to combine the Unit 1 and 2 Technical Specifications into one document and highlight the differences between the Unit 1 and 2 requirements. These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS requirements.

A.2 CTS LCO 3.3.3.1states "*The radiation monitoring instrumentation channels shown* in Table 3.3-6 shall be OPERABLE with their alarm/trip setpoints within the specified limits." ITS LCO 3.3.7 states "The Control Room Emergency Ventilation System (CREVS) actuation instrumentation for each Function in Table 3.3.7-1 shall be OPERABLE." The CTS Applicability references Table 3.3-6 and the corresponding ITS Applicability references Table 3.3.7-1. The CTS is revised to *conform to the ITS. This changes the CTS by stating the LCO and Applicability* requirements in the ITS format.

The proposed change is acceptable because the ISTS does not have a separate TS for radiation monitors. The proposed change involves the re-organization of the CTS requirements into a system related instrument specification (ITS 3.3.7) consistent with the ISTS. The affected CTS requirements are related to the CREVS and are moved into ITS 3.3.7 which is specifically for the CREVS instrumentation. As such the proposed change only represents a change in the format and presentation of the CTS requirements necessary to conform to the ISTS. Technical changes to the CTS requirements are addressed by separate DOCs associated with each change. This change is designated as administrative because the technical requirements of the specifications have not changed.

A.3 CTS 3.3.3.1 Action "b" states "With one or more radiation monitoring channels inoperable, take the ACTION shown in Table 3.3-6." ITS 3.3.7 does not have a corresponding Action. The CTS is revised to conform to the ISTS. This changes the CTS by eliminating Action "b."

CTS Action "b" provides guidance to enter the Actions referenced on Table 3.3-6. The corresponding ITS 3.3.7 Actions are not specified on a table and do not need an Action like CTS Action "b." CTS 3.3.3.1 contains Action requirements for instruments associated with various plant systems. ITS 3.3.7 is a system specific instrumentation specification (for CREVS) and the Actions are common for the instrumentation addressed by the specification. Therefore, the ITS does not need an Action to provide guidance for entering the correct Action for each type of instrument. The proposed change is acceptable because it is a change in the presentation of the Action requirements that is necessary to conform to the ISTS format. The proposed change has no technical impact on the specification. This change is designated as administrative because the technical requirements of the specifications have not changed.

A.4 CTS LCO 3.3.3.1 Action "c" states "The provisions of Specification 3.0.3 are not applicable." The corresponding ITS 3.3.7 does not include a similar provision taking exception to Specification 3.0.3. The CTS is revised to conform to the ISTS. This changes the CTS by deleting the exception to Specification 3.0.3.

The ITS 3.3.7 Applicability for the affected radiation monitors states "During movement of recently irradiated fuel assemblies and during movement of fuel assemblies over recently irradiated fuel assemblies." LCO 3.0.3 results in the plant being shutdown to a Mode where the LCO is no longer Applicable. As such, LCO 3.0.3 does not directly address the ITS 3.3.7 Applicability of fuel movement involving recently irradiated fuel which would normally occur during shutdown conditions. As such, placing the plant in a shutdown condition does not by itself ensure safe operation. Fuel movement involving recently irradiated fuel must be suspended or other compensatory measures (e.g., initiate the CREVS) taken to place the plant in a safe condition. The specific Actions provided in ITS 3.3.7, not LCO 3.0.3, provide the appropriate measures to ensure the plant is placed and maintained in a safe condition. In addition, due to the time constraint involved with recently irradiated fuel, the movement of recently irradiated fuel assemblies can only occur in MODES 5 and 6. Recently irradiated fuel must have been part of a critical core within the previous 100 hours. Therefore, insufficient time is available after the reactor is shutdown to enter refueling mode of operation, remove the fuel from the core, reassemble the vessel and head, and exit Mode 5 within 100 hours after the reactor is initially shutdown. For example, it typically takes more than 100 hours after the reactor is shutdown before the first fuel assembly is moved out of the core. Therefore, the potential movement of recently irradiated fuel is confined to Modes 5 and 6. The ITS specification 3.0.3 recognizes that the Actions provided in LCO 3.0.3 are not appropriate for specifications normally applicable in shutdown Modes 5 and 6 and contains a provision that 3.0.3 does not apply in Modes 5 and 6. Therefore, the CTS 3.3.3.1 exception to LCO 3.0.3 is not required and is deleted. The proposed change is acceptable because the ITS Specification 3.0.3 contains a provision that excepts its requirements in Modes 5 and 6 such that individual exception statements in each TS normally applicable in those Modes are not required. This change is designated as administrative because the technical requirements of the specifications have not changed.

A.5 CTS 3.3.3.1 contains the Actions for inoperable radiation monitoring instrument functions. The CTS 3.3.3.1 Actions address more than one radiation monitoring function. ITS 3.3.7 contains the radiation monitoring requirements for the Control Room Emergency Ventilation System (CREVS) Actuation Instrumentation. The ITS Actions are modified by a note that states "Separate Condition entry is allowed for each Function." This changes the CTS by adding a Note for ITS LCO Actions that specifically state each Function is allowed separate condition entry.

The CTS 3.3.3.1 Actions for the different radiation monitoring instrumentation addressed by that specification are applied separately. The CTS requirements do not prohibit entering the Actions separately for each function addressed by the specification. As such, the addition of the ISTS note is consistent with how the CTS Actions are presented and currently applied. Therefore, the proposed change is acceptable because it retains the CTS allowance to apply Actions separately to each instrument Function. As such, the addition of the ISTS Note is considered a clarification of the CTS Action requirements that does not modify the technical requirements of the CTS. The proposed change is made to adopt the format conventions of the ISTS for Actions that allow for multiple inoperable functions. This change is designated as administrative because the technical requirements of the specifications have not changed.

A.6 CTS Surveillance Requirement 4.3.3.1 states "Each radiation monitoring instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the modes and at the frequencies shown in Table 4.3-3." ITS LCO 3.3.7 specifies the Surveillance Requirements applicable to each instrument function in Table 3.3.7-1. ITS 3.3.7 contains a note for the SRs that states "Refer to the Table 3.3.7-1 to determine which SRs apply for each CREVS Actuation Function." The CTS is revised to conform to the ISTS. This changes the CTS by replacing surveillance 4.3.3.1 with the ISTS note directing the user to the appropriate Table.

The proposed change represents a change in the format and presentation of the surveillance requirements. The proposed change is acceptable because it continues to assure the appropriate surveillance requirements are performed at the required frequency for each instrument function. Any technical changes to the surveillance requirements are addressed by a separate DOC noted in CTS Table 4.3-3. This change only addresses the reformat of the surveillance requirements to be consistent with the ISTS. This change is designated as administrative because the technical requirements of the specifications have not changed.

A.7 The CTS Table 3.3-6 table heading titled "Minimum Channels Operable" is revised to be "Required Channels" consistent with the corresponding ISTS Table 3.3.7-1 Table headings. In addition, the Minimum Channels Operable column of CTS Table 3.3-6 is deleted consistent with the content of the corresponding ISTS Table 3.3.7-1.

The proposed change is acceptable because the revisions described above do not result in technical changes to the number of instrument channels required operable or the applicable Actions when the required channels are not met. All Actions for an inoperable instrument channel in the ISTS are based on the Required Channels specified for the affected function. The new ISTS Action Conditions specify the appropriate action when one or more "Required" instrument channels are inoperable. The minimum channels column used in the CTS to identify the number of operable channels for which continued operation is permissible is no longer used or required in the ITS. The ISTS Actions encompass the concept of the minimum required channels, i.e., the Actions would apply and if not met, the plant would be required to be placed in a Mode or Condition outside the Applicable Mode. The ISTS Actions accomplish this without a specific reference to the minimum channels operable. As such, the proposed change described above does not introduce a technical change to the CTS requirements. In addition, any technical changes to the CTS Actions associated with the affected instrument functions are identified in the markup of those Actions and addressed in the DOCs associated with the changes to the CTS Actions. This DOC is intended to address the reformat of the CTS Table 3.3-6 to conform to the corresponding ISTS Table 3.3.7-1. Therefore, this change is designated administrative.

A.8 CTS Table 4.3-3 contains the surveillance requirements for the control room radiation monitors. CTS Table 4.3-3 specifies a Channel Functional Test for the radiation monitors. In place of the Channel Functional Test ITS SR 3.3.7.2 specifies a Channel Operational Test (COT). The CTS is revised to replace the single Channel Functional Test requirement with the new ISTS defined test requirement (i.e., COT). The CTS Channel Functional Test as well as the new ISTS COT are defined terms specified in Section 1.0 of the TS. The addition of the new ISTS defined terms for surveillance testing and the technical changes to the CTS Channel Functional Test defined term are addressed in the changes made to TS Section 1.0, Definitions. Any technical changes to the requirements for individual radiation monitors will be addressed in the detailed markup of those requirements in CTS Table 4.3-3. This DOC is intended to address the replacement of the Channel Functional Test defined term in Table 4.3-3 with the new ISTS defined term "COT".

The proposed change is acceptable because the radiation monitors will continue to be tested in the same manner as before. The proposed change does not introduce a technical change to the method by which the radiation monitors are currently tested. The proposed change only results in the use of the ISTS specific defined terms for surveillance testing. As such, the radiation monitors continue to be tested in a similar manner as before but the testing being performed is more consistent with the TS defined terms being used to specify the required testing. The proposed change is designated administrative because it does not introduce technical changes to the surveillance testing currently performed for each instrument Function.

A.9 Unit 1 only. The CTS 3.3.3.1 Channel Functional Test requirement for the control room area radiation monitors is modified by footnote ###. The footnote states "Control Room intake and exhaust isolation dampers are not actuated." The corresponding ITS 3.3.7 Channel Operational Test is not modified by this note. The CTS is revised to conform to the ITS. This changes the CTS by eliminating the ### footnote.

The CTS note provided an allowance to minimize the cycling of the Unit 1 control room ventilation intake and exhaust dampers. The CTS Channel Functional Test is required to be performed on a monthly basis. The Unit 1 control room ventilation intake and exhaust dampers use inflatable seals that are subject to wear and potential increased leakage with excessive operation. Therefore, the CTS provided an exception to the required Channel Functional Test for testing the end device (dampers). The CTS definition of Channel Functional Test includes the requirement to verify the "trip function". The CTS requirement to verify the "trip function" was, in the case of the radiation monitors, conservatively interpreted to include the verification of the end device (damper). In most other applications, the CTS channel Functional Test does not include verification of the end device (e.g., SI, reactor trip, main steam isolation, etc. instrument channels). In these cases the Channel Functional Test performed each month or quarterly verified the instrument channel operability without actuating the end device (i.e., initiating SI, reactor trip, or steam line isolation, etc.) and no exceptions like the CTS footnote ### are used for these surveillance requirements. The verification of end device actuation (pump starts, valve actuations, etc.) is typically specified in the associated equipment or system specifications, not the instrumentation specifications, and is typically performed once every 18 months. The ISTS Channel Operational Test does not include the requirement to verify the "trip function" and instead requires the channel "trip setpoint" to be verified. As such, the ISTS test definition more clearly identifies the required testing as an instrument channel test not a system or component operation test. Therefore, the clarification provided by the CTS ### footnote is no longer required to limit cycling of the Unit 1 control room ventilation intake and exhaust. The requirement to verify the CREVS equipment actuates (fans start and dampers position) on an automatic actuation signal is contained in ITS 3.7.10 in SR 3.7.10.3 and required to be performed every 18 months. The more precise ISTS requirements eliminate the necessity for the clarification provided by the CTS footnote. As such, the proposed change does not result in a technical change to how the Unit 1control room intake and exhaust dampers are tested. The proposed change is designated administrative because it does not introduce technical changes to the surveillance testing currently performed.

## Relocated (R)

R.1 CTS 3.3.3.1, Radiation Monitoring, Function 1.c for control room area monitors used to automatically initiate the Control Room Emergency Ventilation System

(CREVS) in Modes 1, 2, 3, and 4 only. Note: Requirements for these radiation monitors are retained in ITS 3.3.7 for fuel movement involving recently irradiated fuel. However, all of the Mode 1, 2, 3, and 4 Applicability requirements of CTS 3.3.3.1 for the control room area monitors including the LCO, Actions and Surveillance Requirements are relocated to the Licensing Requirements Manual (LRM).

The applicable safety analyses for all design basis accidents considered in MODES 1-4 (except LOCA) that require control room isolation and pressurization allow sufficient time for manual initiation of the emergency pressurization mode of operation of control room ventilation (i.e., control room ventilation isolation, filtered makeup, and pressurization). The safety analyses assume a 30-minute delay for control room isolation and pressurization to allow for manual action. The LOCA accident analysis assumes the control room ventilation system is automatically isolated on a CIB signal and subsequently pressurized with filtered air by manual initiation of a CREVS fan and alignment to a filtered flow path. Although the CIB signal will automatically start a CREVS fan and filtered flow path, a 30-minute delay to allow for manual initiation of a CREVS fan and filtered flow path is specifically assumed in all analyses. The 30-minute allowance is required to permit the use of a Unit 1 CREVS fan and filtration flow path which require manual operator action to place in service. The proposed BVPS ITS 3.3.7 continues to assure the assumptions of the safety analysis are met by specifying requirements for the manual system level CREVS initiation switches for each unit in Modes 1 through 4. The requirements for the CIB signal continue to be specified in ITS 3.3.2, "ESFAS Instrumentation" consistent with the ISTS.

The current safety analyses do not assume the control room area radiation monitors provide a CREVS actuation signal for any design basis accident. However, requirements for the radiation monitors to be OPERABLE are retained in case the monitors are required to support the assumptions of a fuel handling accident analysis involving the movement of recently irradiated fuel or the movement of fuel over recently irradiated fuel. The retention of requirements for fuel movement involving recently irradiated fuel is consistent with the guidance (standard TS) provided in NUREG -1431.

The BVPS specific safety analyses assumptions for manual actuation of the CREVS results in a different bases for these requirements than described in the ISTS. Due to the BVPS safety analysis reliance on manual operation, the BVPS radiation monitors do not serve as backup for a required automatic initiation for all design basis accidents. The BVPS safety analysis reliance on manual actuation reduces the importance of the automatic function provided by the BVPS control room radiation monitors. For example, the ISTS Actions for inoperable CREVS instrumentation in Modes 1-4 require CREVS equipment to be run continuously and could result in a unit shutdown. In addition, the continuous operation of the filter system will eventually expend the filter media and result in additional equipment unavailability. The ISTS Actions are more appropriate for plants that rely on automatic CREVS Actuation to mitigate all design basis accidents. Considering the BVPS specific safety analyses reliance on manual CREVS operation, the additional equipment wear and potential system unavailability, as well as the potential for a unit shutdown introduced by the ISTS Actions are overly conservative for inoperable radiation monitor(s). Therefore, BVPS is proposing to relocate the Mode 1 through 4 CTS requirements for the control room area radiation monitors to the BVPS Unit 1 and Unit 2 LRM as appropriate. The control room area radiation monitors will continue to be maintained operable within a more appropriate licensee controlled document consistent with the NRC recommendations in the Final Policy Statement on Technical Specification Improvements for Nuclear Power Reactors, 58 FR 39132, July 22, 1993.

In addition, to not providing an automatic function assumed in any design basis accident analyses, the control room area radiation monitors do not:

1. Provide indication or alarm functions relied on by operators to take manual actions that are assumed in the safety analyses for any design basis accident described in Unit 1 UFSAR Chapter 14 or Unit 2 UFSAR Chapter 15.
2. Provide indication that is used to detect and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary, or
3. Monitor variables that have been identified as Regulatory Guide 1.97 Type A or Category I variables in the BVPS Unit 1 responses to Regulatory Guide 1.97. The BVPS Unit 1 Regulatory Guide 1.97 variable Type and Category are identified in the Unit 1 response to Generic Letter 82-33, Regulatory Guide 1.97, Revision 2, Supplemental Report, transmitted to the NRC by letter dated October 13, 1986.

The four policy statement criteria contained in 10 CFR 50.36(c)(2)(ii) for determining which regulatory requirements and operating restrictions should be included in the TS are as follows:

Criterion 1. Installed instrumentation that is used to detect and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

Criterion 2. A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

Criterion 3. A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

Criterion 4. A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

Criteria 1 and 2 are not applicable to the control room area radiation monitors. Based on the BVPS safety analysis reliance on manual operation of the CREVS, Criterion 3 is not met either. Nor is the CREVS actuation function of the control room area radiation monitors modeled in the BVPS PRA as documented in the Individual Plant Examinations (IPE) and the associated PRA Update Reports for both units. In addition, the radiation monitoring actuation instrumentation for CREVS is not significant to risk because it is not involved in any accident initiation sequences. As such, the control room area radiation monitors were not identified as being a "constraint of prime importance in limiting the likelihood or severity of accident sequences that are commonly found to dominate risk". As such, these CTS requirements have not been shown by risk to be significant to public health and safety. Therefore, Criterion 4 is not met.

Consistent with the guidance of NRC Administrative Letter 96-04, "Efficient Adoption of Improved Standard Technical Specifications," BVPS proposes to relocate TS and associated Bases that do not meet any of the four policy statement criteria to the LRM. The BVPS LRM for each unit is referenced in the BVPS Unit 1 and 2 UFSARs. Relocation of TS requirements to the LRM is acceptable as changes to these relocated documents will be adequately controlled by 10 CFR 50.59. The provisions of 10 CFR 50.59 establish adequate controls for material removed from the TS, including record retention and reporting requirements. The provisions of 10 CFR 50.59 assure future changes to the relocated material will be consistent with safe plant operation.

# ITS 3.3.8 Boron Dilution Detection Instrumentation
# CTS 3.3.1.1 Reactor Trip System Instrumentation
## DISCUSSION OF CHANGE (DOC)

## *Less Restrictive Changes (L)*

L.1 *(Category 4 - Relaxation of Required Action)* CTS Note 7 modifies the CTS Source Range Action (#5) and states: "Plant cooldown is allowable provided the temperature change is accounted for in the calculated shutdown margin." The ITS contains a similar note that modifies the required Actions of ITS 3.3.8 Action Condition A. The ITS Note states: "Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM." The CTS Action is revised to conform to the ITS. This changes the effect of the CTS note by providing the additional allowance to increase temperature as well as the existing CTS allowance to cooldown.

The proposed change is acceptable because it continues to assure the required Shutdown Margin (SDM) is maintained. The proposed change addresses plant operation with a positive moderator temperature co-efficient. In this case, temperature increases must be evaluated to assess the impact on the SDM. As the proposed change does not reduce the SDM required by the TS, it does not adversely affect the safe operation of the plant. In addition, the proposed change provides additional assurance that temperature increases as well as decreases will be evaluated as necessary to assure the required SDM is maintained. This change is designated as less restrictive because the CTS exception to the Actions is expanded to include temperature increases as well as decreases.

L.2 *(Category 5 – Deletion of Surveillance Requirement)* CTS Table 4.3-1 Function 6.b specifies the performance of a CHANNEL FUNCTIONAL TEST (CFT) for the required Source Range Neutron Flux channel. The test must be performed on a quarterly basis and is modified by Note 8. The Note states "Below P-6, not required to be performed for source range instrumentation prior to entering MODE 3 from MODE 2 until 12 hours after entry into MODE 3." The corresponding ITS LCO 3.3.8 does not require the performance of a CFT (or Channel Operational Test (COT) in the ISTS) of the Source Range instrument channel required operable. The CTS surveillance requirements are revised to conform to the ITS. This changes the CTS by deleting the CTS CFT surveillance requirement.

The CTS CFT and the corresponding COT in the ISTS are specific tests performed on instrument channels to verify the instrument channel performs its required trip or actuation function (i.e., a functional or operational test of the channel). Typically instrument channels used for indication only do not require a CFT or COT. Indication channels are subject to channel checks and channel calibrations. The primary purpose of performing the CTS CFT is to verify the reactor trip function associated with the Source Range instrumentation. However, the Applicability for this particular Source Range instrument function is "with all rods fully inserted and without rod withdrawal capability." In this mode of operation the Source Range instrumentation is used for indication only.

Therefore, in this condition the trip function of the Source Range instrumentation is not required operable.

The proposed change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the Source Range channel is capable of performing its required function under the conditions specified in the applicability. In addition, appropriate Source Range channel surveillance requirements (i.e., channel check and channel calibration) continue to be performed in a manner and at a frequency necessary to give confidence that the Source Range instrumentation remains capable of performing its required function (i.e., indication). The required Source Range channel does not provide any required trip or actuation function in this mode of operation. Additionally, the requirements of the TS (Section 3.0) continue to provide adequate assurance that prior to entering a mode of operation where the Source Range trip function is required by an LCO, the appropriate surveillances will be performed to verify the required trip function is operable or that mode of operation will not be entered. The proposed change results in more appropriate surveillance requirements being specified consistent with the functions required operable by the LCO and the conventions of the ISTS. This change is designated as less restrictive because a Surveillance Requirement which is required in the CTS will not be required in the ITS.

## *More Restrictive Changes (M)*

M.1 CTS Action 5, applicable to the Source Range instrumentation, requires that positive reactivity additions be suspended. The corresponding ITS Action A.1 also requires positive reactivity additions to be suspended. However, the ITS Action also requires that actions be suspended immediately. The CTS is revised to conform to the ITS. This changes the CTS by specifying that the Action is required immediately.

The proposed change is acceptable because it provides additional assurance the plant is placed in a safe condition when the required Source Range monitoring capability is not available. The proposed change assures prompt Action is taken when the required Source Range instrumentation is not available. As such, the proposed change does not adversely affect the safe operation of the plant. The proposed change is designated more restrictive because it imposes a more specific immediate completion time for the Action.

## *Removed Detail Changes (LA)*

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-1 specifies the requirements for the Source Range instrumentation. For Function 6.b, the CTS Table specifies the total number of channels as two. The corresponding ITS LCO 3.3.8, "Boron Dilution Detection Instrumentation" specifies one Source Range channel operable. The ITS does not describe the total number of channels but the number of channels required operable. The CTS is revised to conform to the ITS. This changes the CTS by moving the total number of channels from the specification to the ITS Bases.

The removal of these details, which are related to system design, from the TS is acceptable because this type of information is not necessary to be included in the TS to provide adequate protection of public health and safety. The TS retain the requirement for a single Source Range channel to be operable for indication purposes. The proposed change is acceptable because it is consistent with the CTS requirements for the minimum number of channels required operable (i.e., one). Although CTS Table 3.3-1 contains the total number of Source Range channels (2), the Action associated with the Source Range Function on Table 3.3-1 is only applicable when the number of operable channels is less than the minimum. As the minimum specified is one channel, the action is only applicable when both Source Range Channels are inoperable. Therefore, the CTS effectively only requires one of the two total channels to be operable. The proposed ITS 3.3.8 LCO requirement for a single operable source range channel is consistent with these CTS requirements. As such, the inclusion in CTS Table 3.3-1 of information regarding a total of two Source Range channels is design description detail that does not need to be in the TS.

In addition, this change is acceptable because the removed information will be adequately controlled in the TS Bases. Changes to the Bases are controlled by the TS Bases Control Program specified in Section 5 of the TS. This program provides for the evaluation of Bases changes in accordance with 10 CFR 50.59 to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design (total number of channels) is being removed from the Technical Specifications.

LA.2 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* Unit 2 only. Unit 2 CTS Table 3.3.1 Function 6 specifies the Source Range Neutron Flux requirements. The Unit 2 requirements are modified by Note (8) that states "Alternate detectors may only be used for monitoring purposes Without Rod Withdrawal Capability until detector functions are modified to permit equivalent alarm and trip functions." The corresponding ITS LCO 3.3.8 does not contain a similar note. The CTS is revised to conform to the ISTS. This changes the CTS by moving the allowance for using alternate Source Range detectors for indication purposes from CTS Table 3.3-1 to the ITS 3.3.8 Bases.

The removal of these details, which are related to system design, from the TS is acceptable because this type of information is not necessary to be included in the TS to provide adequate protection of public health and safety. The TS still retain the requirement for a source range channel to be operable and the associated bases describe the specific operability requirements. In the ITS the bases contain the details of specific operability requirements associated with the equipment required operable by the LCO. As such, the proposed change conforms to the format and presentation of operability requirements in the ITS.

The specific function of the Source Range instrumentation in this case is to provide indication only. Unit 2 has alternate instrumentation installed that is capable of providing indication but is not connected to the Reactor Trip System and therefore has no trip capability. As such, the alternate Unit 2 instrumentation (Gamma-Metrics NE-52A and NE-52B) may provide the required Source Range indication function but may not be substituted in the Reactor Trip System. CTS Note 8 clarifies this Unit 2 design feature. It should be noted that any instrumentation used to meet the requirements of the LCO is subject to the surveillance requirements and any other operability requirements specified in the associated bases for the LCO. Therefore, the TS prohibit the substitution of an alternate Unit 2 detector for a Source Range instrument required operable for Reactor Trip purposes. The CTS Note 8 is not required for this purpose.

The proposed change is also acceptable because the removed information will be adequately controlled in the TS Bases. Changes to the Bases are controlled by the TS Bases Control Program specified in Section 5 of the TS. This program provides for the evaluation of Bases changes in accordance with 10 CFR 50.59 to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the TS

LA.3 *(Type 2 - Removing Descriptions of System Operation)* The applicable Modes in CTS Table 3.3-1 for the Source Range instrumentation specify Modes 3, 4, and 5. The Modes are modified by Note 8 (Unit 1) and Note 9 (Unit 2)." The Note states, "In this condition, source range Function does not provide reactor trip but does provide indication." The corresponding ITS LCO 3.3.8 "Boron Dilution Detection Instrumentation" does not contain a similar note. The CTS is revised to conform to the ITS. This changes the CTS by moving the description of the Source Range instrument operation requirements from the CTS Table 3.3-1 to the ITS 3.3.8 bases.

The removal of this detail, which is related to the system operation in this Mode, from the TS is acceptable because this type of information is not necessary to be included in the TS to provide adequate protection of public health and safety. The TS still retain the requirement for a source range channel to be operable and the associated bases describe the specific operability requirements (i.e., the indication requirements). In the ITS the bases contain the details of specific operability requirements associated with the equipment required operable by the LCO. As such, the proposed change conforms to the format and presentation of operability requirements in the ITS.

The proposed change is also acceptable because the removed information will be adequately controlled in the TS Bases. Changes to the Bases are controlled by the TS Bases Control Program specified in Section 5 of the TS. This program provides for the evaluation of Bases changes in accordance with 10 CFR 50.59 to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system operation is being removed from the TS.

LA.4 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Action 5 states, in part, for an inoperable Source Range channel, "Close unborated water source isolation valves (2CHS-91, 2CHS-96 and 2CHS-138) or (2CHS-37 and 2CHS-828)" for Unit 2 and "(1CH-90) or (1CH-91 and 1CH-93)" for Unit 1. ITS 3.3.8 Required Action A.2.2.1 states "Close unborated water source isolation valves" within 1 hour. The ITS does not include specific valve numbers in the specification. The ITS retains the specific valve numbers in the Bases for ITS 3.1.8, "Unborated Water Source Isolation Valves." The Bases for ITS 3.3.8 refers to ITS 3.1.8 for the specific valves. The CTS Action is revised to conform to the ITS. This changes the CTS by moving the specific valve ID numbers from the specification to the ITS 3.1.8 Bases.

The removal of these details, which are related to system design, from the TS is acceptable because this type of information is not necessary to be included in the TS to provide adequate protection of public health and safety. The TS still retain the requirement for the unborated water source isolation valves to be closed. Therefore, the TS continue to assure the plant is operated in a safe manner. In addition, the ITS only lists the specific valves in a single location (Bases for ITS 3.1.8) to facilitate the control of this information. The proposed change is also acceptable because the removed information will be adequately controlled in the TS Bases. Changes to the Bases are controlled by the TS Bases Control Program specified in Section 5 of the TS. This program provides for the evaluation of Bases changes in accordance with 10 CFR 50.59 to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.5 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS LCO 3.3.1 Table 4.3-1 specifies the surveillance requirements applicable to the Source Range instrumentation. Note 15 on Table 4.3-1 modifies the Source Range Instrumentation surveillance requirements by specifying "Surveillance Requirements need not be performed on alternate detectors until connected and required for OPERABILITY." The corresponding ITS LCO 3.3.8 surveillance requirements are not modified by a similar note. The CTS requirements are revised to conform to the ITS. This changes the CTS by moving the statement that surveillance requirements need not be performed on alternate detectors until connected and required for OPERABILITY from the specification to the ITS Bases.

The CTS note provides a clarification of TS requirements and is not essential to implementing the requirements specified for the Source Range instrumentation. In order to meet the requirements of any TS LCO the affected system or component must be determined to be operable via the required surveillances. There are no TS requirements to determine the operability of components or systems not used to meet the requirements of an LCO. Therefore, only the source range instruments used to meet the requirements of the LCO are subject to the TS surveillance requirements of that LCO. Therefore, alternate source range detectors would only be subject to TS surveillance requirements when they are used to meet the requirements of that LCO. The CTS note provides a clarification of this fact.

The removal of these details, which are related to the system design (extra detectors available), from the TS is acceptable because this type of information is not necessary to be included in the TS to provide adequate protection of public health and safety. The TS still retain the requirement for a Source Range channel to be OPERABLE. Therefore, the TS continue to provide adequate assurance the plant is operated in a safe manner. The proposed change is also acceptable because the removed information will be adequately controlled in the TS Bases. Changes to the Bases are controlled by the TS Bases Control Program specified in Section 5 of the TS. This program provides for the evaluation of Bases changes in accordance with 10 CFR 50.59 to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

## *Administrative Changes (A)*

A.1 In the conversion of the Beaver Valley Power Station current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering or order, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

Due to the large number of such changes, A.1 changes may not always be marked on each CTS page. Marked or unmarked, all A.1 changes are identified by a single annotation of A.1 at the top of the first page of each CTS. These changes include all non-technical modifications of requirements to provide consistency with the ISTS, including all significant format changes made to update the older NUREG-0452 Technical Specification presentation to the ISTS format. This type of change is also associated with the movement of requirements within the Technical Specifications and with changes made to the presentation of Technical Specifications requirements to combine the Unit 1 and 2 Technical Specifications into one document and highlight the differences between the Unit 1 and 2 requirements. These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS requirements.

A.2 CTS LCO 3.3.1.1 requires the reactor trip system (RTS) instrumentation channels of Table 3.3-1 shall be OPERABLE. For Function 6.b, the CTS Table specifies the channels required to trip as zero. The corresponding ITS LCO 3.3.8, "Boron Dilution Detection Instrumentation" specifies one Source Range channel operable. The ITS does not describe the number of channels required to trip but the number of channels required operable. The CTS is revised to conform to the ITS. This changes the CTS by deleting the number of channels to trip from Table 3.3-1.

The proposed change is acceptable because the information being deleted is not required in the TS to assure the specified Source Range instrumentation can perform its required function. The information being deleted helps to describe the required Source Range function (i.e., indication only). No trip function is specified on the CTS Table. As such, the channels to trip information is descriptive text to help differentiate the unique indication Function specified for the Source Range from all the other reactor trip Functions specified in CTS Table 3.3-1. The affected CTS Source Range instrument requirements are being moved into a separate TS (ITS 3.3.8) that only specifies the indication requirements applicable to the Source Range instrumentation. Therefore, the information in the CTS specifying the number of channels to trip as zero is no longer required to help clarify the indication only requirements applicable to the Source Range instrumentation. As this descriptive information has no technical effect on the CTS or ITS requirements, the proposed change is designated administrative.

A.3 CTS LCO 3.3.1.1 requires the reactor trip system (RTS) instrumentation channels of Table 3.3-1 shall be OPERABLE. RTS Function 6.b Source Range Neutron Flux on Table 3.3-1 requires a minimum of one Source Range channel to be OPERABLE. ITS LCO 3.3.8 "Boron Dilution Detection Instrumentation" requires one Source Range instrument channel to be OPERABLE. The CTS is revised to conform to the ITS. This changes the CTS by moving the Source Range instrumentation minimum channel operable requirement from the RTS Functions on Table 3.3-1 to the new ITS 3.3.8.

The purpose of proposed ITS LCO 3.3.8 is to provide an appropriate LCO requirement for the indication function of the Source Range instrumentation. No trip function is provided by the source range instrumentation with all rods inserted and not capable of being withdrawn. Therefore, the indication Function of the Source Range instrumentation is not part of the Reactor Trip System. The proposed change is acceptable because it maintains the minimum channel operable requirement of the CTS and includes that requirement in a more appropriate LCO for the required indication function. This change is designated as administrative because the technical requirement for a single channel of operable Source Range instrumentation for indication purposes is not changed.

A.4 Unit 2 only. Unit 2 CTS Table 3.3.1 Function 6 specifies the Source Range Neutron Flux requirements. The Unit 2 requirements are modified by Note (8) that states "Alternate detectors may only be used for monitoring purposes Without Rod Withdrawal Capability until detector functions are modified to permit equivalent alarm and trip functions." The corresponding ITS LCO 3.3.8 does not contain a similar note. The CTS is revised to conform to the ISTS. This changes the CTS by deleting the portion of the note that states " until detector functions are modified to permit equivalent alarm and trip functions."

The specific function of the Source Range instrumentation in this case is to provide indication only. Unit 2 has alternate instrumentation installed that is capable of providing indication but is not connected to the Reactor Trip System and therefore has no trip capability. As such, the alternate Unit 2 instrumentation (Gamma-Metrics NE-52A and NE-52B) may provide the required Source Range indication function but may not be substituted in the Reactor Trip System. CTS Note 8 clarifies this Unit 2 design feature. It should be noted that any instrumentation used to meet the requirements of the LCO is subject to the surveillance requirements and any other operability requirements specified in the associated bases for the LCO. Therefore, the TS would prohibit the substitution of an alternate Unit 2 detector for a Source Range instrument required operable for Reactor Trip purposes without the clarification provided by Note 8. The Unit 2 CTS Note 8 is not required for this purpose. In addition, the indication only requirements for the Source Range instrumentation are being moved into a separate TS (ITS 3.3.8) along with the allowance to use alternate detectors for indication specified in Note 8. As such, the proposed change is acceptable because the deletion of the affected information in CTS Note 8 has no technical impact and due to the separate LCO for Source Range indication requirements the information is no longer useful as a clarification. The proposed change is designated administrative because it has no technical impact on the TS.

A.5 CTS LCO 3.3.1.1 requires the reactor trip system (RTS) instrumentation channels of Table 3.3-1 shall be OPERABLE. CTS Table 3.3-1 Function 6.b, Source Range Neutron Flux, requires a minimum of one Source Range channel to be OPERABLE. For an inoperable Source Range channel CTS Action 5 must be entered. The Action requires the suspension of operations involving positive reactivity additions, closing of the unborated water source isolation valves within 1 hour, and performing Shutdown Margin (SDM) verification within 1 hour and once per 12 hours thereafter. The corresponding ITS LCO 3.3.8 "Boron Dilution

Detection Instrumentation" Condition A.1 specifies an alternate Action (A.2.1) within the 1 hour allowed by the CTS to close unborated water source isolation valves. The alternate ITS Action A.2.1 provides the option to restore the inoperable Source Range channel to operable status within 1 hour instead of closing the unborated water source isolation valves. The CTS Actions are revised to conform to the ITS. This changes the CTS by providing an alternate Action to closing the unborated water source isolation valves.

The purpose of the new ITS Required Action A.2.1 is to clarify the option to restore the required Source Range channel to operable status within an hour in lieu of closing the required valves. The restoration of the required channel will result in meeting the LCO requirement and exiting the Actions. The option provided by the ITS Action does not introduce a technical change to the CTS Actions. The ITS Actions continue to require that the unborated water source isolation valves be closed within 1 hour. However, this Action is not required if the requirements of the LCO are met within this time. Once the requirements of the LCO are met, the ability to monitor core reactivity and detect an unplanned dilution event is restored. Restoration of systems or components to meet the requirements of an LCO is always an option in the TS. As such, the proposed change does not affect the technical requirements of the CTS and is considered a clarification. This change is designated as administrative because the technical requirements of the specifications have not changed.

A.6 CTS Table 3.3-1 for Function 6.b Source Range Neutron Flux requires a minimum of one channel to be operable and specifies that Action 5 is applicable. CTS Action 5 in part states "With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement...." The corresponding ITS LCO 3.3.8, "Boron Dilution Detection Instrumentation," states that "One Source Range channel shall be OPERABLE." ITS Condition A applies when the required channel is inoperable. The CTS Action is revised to conform to the ITS Action. This changes the CTS by reformatting the Action requirements consistent with the ISTS presentation of Actions.

This change is acceptable because the ITS requirements are consistent with the CTS requirements. Both the CTS and ITS Action are initiated when the single required Source Range channel becomes inoperable. The CTS Action text is converted to the ITS Action Condition format without introducing a technical change to the CTS. This change is designated as administrative because the technical requirements of the specifications have not changed.

A.7 CTS Action # 5.c references Surveillance Requirements 4.1.1.1.1 or 4.1.1.2, as applicable to determine Shutdown Margin. The corresponding ITS Required Action A.2.2.2 only references a single surveillance (SR 3.1.1.1) to determine Shutdown Margin. The CTS is revised to conform to the ITS. This changes the CTS Action by only referencing a single surveillance instead of two surveillances for determining Shutdown Margin.

The proposed change is acceptable because the two CTS surveillance requirements for determining Shutdown Margin are combined into one surveillance in the ITS (in Section 3.1, Reactivity Control Systems). The ITS only has one specification for Shutdown Margin (ITS 3.1.1) with one surveillance for Shutdown Margin (SR 3.1.1.1). The combination of the CTS surveillance requirements into a single ITS requirement represents a change in the format and presentation of the

CTS requirements and does not introduce a technical change. The Shutdown Margin continues to be verified in the same manner as before. Therefore, the proposed change is designated administrative.

A.8 CTS Table 4.3-1 contains the surveillance requirements for the affected Source Range instrumentation (Function 6b). In addition to specifying the surveillance requirements, the CTS Table also repeats the list of Functions and the applicable Modes for each Function. CTS Table 4.3-1 specifies a Channel Calibration on a refueling (18 month) frequency and a Channel Check every shift or 12 hours. The corresponding ITS 3.3.8 surveillance requirements (Channel Calibration and Channel Check) are not listed in a table format. The ITS 3.3.8 surveillances are presented in the standard format without using a Table. The CTS is revised to conform to the ITS. This changes the CTS by eliminating Table 4.3-1 for the affected Source Range instrument function surveillances. This DOC is intended to address the elimination of the CTS Table format. Other DOCs specified in the markup of Table 4.3-1 and Table 3.3-1 address technical changes to the CTS requirements.

The proposed change is acceptable because the technical requirements contained in Table 4.3-1 are retained in proposed ITS 3.3.8 surveillances without the need of a separate table. The CTS Table lists the specific Functions, the required surveillances, and applicable Modes. ITS 3.3.8 continues to specify the Source Range instrument function but specifies the applicable Modes and surveillances consistent with the more typical presentation of these requirements in the ISTS (i.e., no table). The Table format is more useful when the requirements are different for each Function listed on the Table. Therefore, the technical requirements specified on CTS Table 4.3-1 are retained in the ITS format and elimination of CTS Table 4.3-1 does not result in a technical change to the CTS requirements. The proposed change is designated administrative because it does not result in a technical change to the CTS requirements.

ENCLOSURE 4

DETERMINATIONS OF
***NO SIGNIFICANT HAZARDS CONSIDERATION (NSHC)***
FOR
CHANGES MADE TO THE BVPS
CURRENT TECHNICAL SPECIFICATIONS (CTS)

Introduction

The determinations of NSHC contained within this Enclosure consist of two general types. This enclosure contains "Generic" NSHC developed for the categories of change identified in Enclosure 3 (Changes to the CTS) and "Specific" NSHC for those "Less Restrictive" changes that do not fit within one of the generic determinations of NSHC listed below. Each specific NSHC is identified by the associated Technical Specification and discussion of change (DOC) number from Enclosure 3.

Enclosure Contents

NO SIGNIFICANT HAZARDS DETERMINATION
FOR

***ADMINISTRATIVE CHANGES***

The Beaver Valley Power Station (BVPS) is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve reformatting, renumbering, and rewording of Technical Specifications with no change in intent. These changes, since they do not involve technical changes to the Technical Specifications, are administrative.

This type of change is associated with the movement of requirements within the Technical Specifications, or with the modification of wording or format that does not affect the technical content of the current Technical Specifications. In addition, these changes include all non-technical modifications of requirements to provide consistency with the ISTS in NUREG-1431. Administrative changes do not add, delete, or relocate any technical requirements of the current Technical Specifications.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change involves reformatting, renumbering, and rewording the existing Technical Specifications. The reformatting, renumbering, and rewording process involves no technical changes to the existing Technical Specifications. As such, this change is administrative in nature and does not affect initiators of analyzed events or assumed mitigation of accident or transient events. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or changes in methods governing normal plant operation. The proposed change will not impose any new or eliminate any old requirements. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **Does this change involve a significant reduction in a margin of safety?**

   The proposed change will not reduce a margin of safety because it has no effect on any safety analyses assumptions. This change is administrative in nature. Therefore, the change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR

***MORE RESTRICTIVE CHANGES***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve adding more restrictive requirements to the existing Technical Specifications by either making current requirements more stringent or by adding new requirements that currently do not exist.

These changes include such things as additional commitments that decrease allowed outage times, increase the frequency of surveillances, impose additional surveillances, increase the scope of specifications to include additional plant equipment, increase the applicability of specifications, or provide additional actions. These changes are generally made to conform to the ISTS in NUREG-1431 and are only included in the Technical Specifications when they serve to enhance the safe operation of the plant and are consistent with the applicable plant specific design basis and safety analysis assumptions.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change provides more stringent requirements for operation of the facility. These more stringent requirements do not result in operation that will increase the probability of initiating an analyzed event and do not alter assumptions relative to mitigation of an accident or transient event. The more restrictive requirements continue to ensure process variables, structures, systems, and components are maintained consistent with the safety analyses and licensing basis. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or changes in methods governing normal plant operation. The proposed change does revise Technical Specification requirements. However, these changes are consistent with the assumptions in the safety analyses and licensing basis. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
**MORE RESTRICTIVE CHANGES**
(continued)

**3. Does this change involve a significant reduction in a margin of safety?**

The imposition of more restrictive requirements either has no effect on or increases the margin of plant safety. Each change in this category is, by definition, providing additional restrictions to enhance plant safety. The change maintains requirements within the safety analyses and licensing basis. Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR

***RELOCATED SPECIFICATIONS***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve relocating existing Technical Specification LCOs to licensee controlled documents.

FirstEnergy Nuclear Operating Company has evaluated the current Technical Specifications using the criteria set forth in 10 CFR 50.36. Specifications identified by this evaluation that did not meet the retention requirements specified in the regulation are not included in the ISTS conversion submittal. These specifications have been relocated from the current Technical Specifications to an appropriate licensee controlled document.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change relocates requirements and surveillances for structures, systems, components or variables that do not meet the criteria of 10 CFR 50.36 (c)(2)(ii) for inclusion in Technical Specifications as identified in the Application of Selection Criteria to the Beaver Valley Technical Specifications. The affected structures, systems, components or variables are not assumed to be initiators of analyzed events and are not assumed to mitigate accident or transient events. The requirements and surveillances for these affected structures, systems, components or variables will be relocated from the Technical Specifications to an appropriate administratively controlled document which will be maintained pursuant to 10 CFR 50.59. As such, the relocation of requirements will only affect the level of regulatory control applicable to changes to the requirements. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or change in the methods governing normal plant operation. The proposed change will not impose or eliminate any requirements and adequate control of existing requirements will be maintained. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
**RELOCATED SPECIFICATIONS**
(continued)

3. **Does this change involve a significant reduction in a margin of safety?**

The proposed change does not reduce a margin of safety. The affected requirements are not being changed and are not specific assumptions of any design basis safety analysis, as indicated by the fact that the requirements do not meet the 10 CFR 50.36 criteria for retention in the Technical Specifications. The affected requirements are relocated without change and any future changes to these requirements will be evaluated per 10 CFR 50.59. The provisions of 10 CFR 50.59 provide adequate assurance that future changes to the relocated material will not affect the safe operation of the plant. In addition, the proposed change is consistent with the application of the 10 CFR 50.36 criteria endorsed by the NRC, which provides additional assurance that the proposed change will not adversely affect the safe operation of the plant. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

## NO SIGNIFICANT HAZARDS DETERMINATION FOR *LESS RESTRICTIVE CHANGES -*

## *REMOVED DETAIL*

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve moving details out of the Technical Specifications and into the Technical Specifications Bases, the Updated Final Safety Analyses Report (UFSAR), the Licensing Requirements manual (LRM) or other documents under regulatory control such as the Quality Assurance Program. The removal of this information is considered to be less restrictive because the Technical Specification change process no longer controls the information. Typically, the affected information is descriptive detail and the removal of this information conforms to the NRC approved content and format of the ISTS in NUREG-1431.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change relocates certain details from the Technical Specifications to other documents under regulatory control. The Technical Specification Bases, UFSAR, and Licensing Requirement Manual will be maintained in accordance with 10 CFR 50.59. In addition to 10 CFR 50.59 provisions, the Technical Specification Bases are subject to the change control provisions in the Administrative Controls Chapter of the Technical Specifications. The UFSAR is subject to the change control provisions of 10 CFR 50.71(e). Other documents used to contain the removed information are subject to controls imposed by Technical Specifications or regulations. As such, the relocation of descriptive details will only affect the level of regulatory control applicable to changes to the information moved. Changes to the affected information will continue to be evaluated in accordance with 10 CFR 50.59. As such, no significant increase in the probability or consequences of an accident previously evaluated will result. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operations. The proposed change will not impose or eliminate any requirements, and adequate control of the information will be maintained. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
**LESS RESTRICTIVE CHANGES - REMOVED DETAIL**
(continued)

3. **Does this change involve a significant reduction in a margin of safety?**

The proposed change will not reduce a margin of safety because it has no effect on any safety analysis assumptions. In addition, the descriptive details to be moved from the Technical Specifications to other documents are not being changed. Since any future changes to these details will be evaluated under the applicable regulatory change control mechanism, no significant reduction in a margin of safety will be allowed. A significant reduction in the margin of safety is not associated with the elimination of the 10 CFR 50.92 requirement for NRC review and approval of future changes to the relocated details. The proposed change provides consistency with the level of detail in the Westinghouse Standard Technical Specifications, NUREG-1431, issued and approved by the NRC Staff, which provides additional assurance that the proposed change has been evaluated and determined not to introduce a significant reduction in the margin of safety. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR

***LESS RESTRICTIVE CHANGES***
CATEGORY 1

***RELAXATION OF LCO REQUIREMENTS***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve relaxation of the current Technical Specification (CTS) Limiting Conditions for Operation (LCOs) such as the elimination of specific items from the LCO or Tables referenced in the LCO, or the addition of exceptions to the LCO.

These changes reflect the ISTS approach to provide LCO requirements that specify the protective conditions that are required to meet safety analysis assumptions for required features. These conditions replace the lists of specific devices used in the CTS to describe the requirements needed to meet the safety analysis assumptions. The ISTS also includes LCO Notes that allow exceptions to the LCO for the performance of testing or other operational needs. The ISTS provides the protection required by the safety analysis and provides flexibility for meeting the conditions without adversely affecting operations since equivalent features are required to be OPERABLE. The proposed changes may also be consistent with the current licensing basis, as identified in the discussion of individual changes. These changes are generally made to conform to NUREG-1431 or more accurately reflect the current licensing basis and have been evaluated to not be detrimental to plant safety.

The proposed changes are acceptable because they have been determined to be applicable to the BVPS design and consistent with the assumptions of the BVPS safety analyses. The effect of each change relative to the safe operation of the plant was evaluated in the discussion associated with the change. In addition, the proposed changes that are consistent with the ISTS have been previously evaluated by Westinghouse Electric Corp., the Westinghouse Owners Group, NEI, and the NRC in developing the ISTS and found not to adversely affect the safe operation of Westinghouse plants. In the Final Policy Statement on Technical Specification Improvements for Nuclear Power Reactors (58 FR 39132, 7/22/93), the NRC encourages licensees to update their Technical Specifications consistent with their vendor-specific ISTS and endorses the implementation of these new Technical Specifications by stating that implementation of the ISTS is expected to produce an improvement in the safety of nuclear power plants. Furthermore, the provisions of the ISTS have been adopted by many Westinghouse plants over the last 10 years. The combined operating experience of the plants that have implemented the ISTS also serves to demonstrate that the provisions of the ISTS do not adversely affect the safe operation of Westinghouse plants.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 1
**RELAXATION OF LCO REQUIREMENTS**
(continued)

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change provides less restrictive LCO requirements for operation of the facility. The effect of the change relative to the safe operation of the plant was evaluated in the discussion associated with the change. The change has been determined not to adversely affect the safe operation of the plant. In addition, changes that are consistent with the ISTS have been previously evaluated and found not to adversely affect the safe operation of Westinghouse plants. Based on the conclusions of the plant specific evaluation associated with the change and the evaluation performed in developing the ISTS, the proposed change does not result in operating conditions that will significantly increase the probability of initiating an analyzed event. In addition, the proposed change was evaluated to assure that it does not alter the safety analysis assumptions relative to mitigation of an accident or transient event and that the resulting requirements continue to ensure the necessary process variables, structures, systems, and components are maintained operable consistent with the safety analyses. As such the proposed change also does not result in operating conditions that will significantly increase the consequences of an analyzed event. Therefore, the change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. The proposed change does impose different requirements. However, the change is consistent with the assumptions in the safety analyses and licensing basis. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **Does this change involve a significant reduction in a margin of safety?**

   The effect of the change relative to the safe operation of the plant was evaluated in the discussion associated with the change. The change has been determined not to adversely affect the safe operation of the plant. In addition, changes that are consistent with the ISTS have been previously evaluated and found not to adversely affect the safe operation of Westinghouse plants. Based on the conclusions of the plant specific evaluation associated with each change and the evaluation performed in developing the ISTS, the change has been determined to maintain plant operation within the assumptions of the applicable safety analyses. As such, the change does not result in operating conditions that significantly reduce any margin of safety. Therefore, the change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 2

***RELAXATION OF APPLICABILITY***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve relaxation of the applicability of current Technical Specification (CTS) Limiting Conditions for Operation (LCOs) by reducing the conditions under which the LCO requirements must be met.

Technical Specification Applicability can be specific defined terms of reactor conditions or more general (e.g., all MODES or any operating MODE). Such generalized applicability conditions are not contained in ISTS, therefore the ISTS eliminates such Applicability requirements replacing them with ISTS defined MODES or specific reactor or plant conditions that are consistent with the safety analysis assumptions for operability of the required features.

Applicability requirements may also be eliminated during conditions for which the safety function of the specified safety system is met because the feature is performing its intended safety function (e.g. actuation instrumentation may no longer be required for an isolation valve already in its required safety position). Deleting applicability requirements that are indeterminate or that are inconsistent with the application of accident analyses assumptions is acceptable because when LCOs cannot be met, the Technical Specifications may be satisfied by exiting the applicability which takes the plant out of the conditions that require the safety system to be OPERABLE.

These changes provide the protection required by the safety analysis and provide flexibility for meeting limits by restricting the application of the limits to the conditions assumed in the safety analyses. The proposed changes may also be consistent with the current licensing basis, as identified in the discussion of individual changes. These changes are generally made to conform to NUREG-1431 or more accurately reflect the current licensing basis and have been evaluated to not be detrimental to plant safety.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 2
**RELAXATION OF APPLICABILITY**
(continued)

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change relaxes the conditions under which the LCO requirements for operation of the facility must be met. These less restrictive applicability requirements for the LCOs do not result in operation that will increase the probability of initiating an analyzed event and do not alter assumptions relative to mitigation of an accident or transient event in that the requirements continue to ensure that process variables, structures, systems, and components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. The proposed change does impose different requirements. However, the requirements are consistent with the assumptions in the safety analyses and licensing basis. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **Does this change involve a significant reduction in a margin of safety?**

   The relaxed applicability of LCO requirements does not involve a significant reduction in the margin of safety. This change has been evaluated to ensure that the LCO requirements are applied in the MODES and specified conditions assumed in the safety analyses and licensing basis. Therefore, this change does not involve a significant reduction in a margin of safety.

# NO SIGNIFICANT HAZARDS DETERMINATION FOR LESS RESTRICTIVE CHANGES – CATEGORY 3

## *RELAXATION OF COMPLETION TIME*

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve relaxation of the Completion Times for Required Actions in the current Technical Specifications (CTS).

Upon discovery of a failure to meet a Limiting Condition for Operation (LCO), the ISTS specifies times for completing Required Actions of the associated Technical Specification Conditions. Required Actions of the associated Conditions are used to establish remedial measures that must be taken within specified Completion Times (referred to as Allowed Outage Times (AOTs) in the CTS). These times define limits during which operation in a degraded condition is permitted. Adopting Completion Times from the ISTS is acceptable because the Completion Times take into account the operability status of the redundant systems of required features, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a design basis accident occurring during the repair period. In addition, the ISTS provides consistent Completion Times for similar conditions. These changes are generally made to conform to NUREG-1431 and have been evaluated to not be detrimental to plant safety.

The effect of each change relative to the safe operation of the plant was evaluated in the discussion associated with the change. In addition, the proposed changes that are consistent with the ISTS have been previously evaluated by Westinghouse Electric Corp., the Westinghouse Owners Group, NEI, and the NRC in developing the ISTS and found not to adversely affect the safe operation of Westinghouse plants. In the Final Policy Statement on Technical Specification Improvements for Nuclear Power Reactors (58 FR 39132, 7/22/93), the NRC encourages licensees to update their Technical Specifications consistent with their vendor-specific ISTS and endorses the implementation of these new Technical Specifications by stating that implementation of the ISTS is expected to produce an improvement in the safety of nuclear power plants. Furthermore, the provisions of the ISTS have been adopted by many Westinghouse plants over the last 10 years. The combined operating experience of the plants that have implemented the ISTS also serves to demonstrate that the provisions of the ISTS do not adversely affect the safe operation of Westinghouse plants.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 3
**RELAXATION OF COMPLETION TIME**
(continued)

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

The proposed change provides a less restrictive Completion Time for a Required Action. The effect of the change relative to the safe operation of the plant was evaluated in the discussion associated with the change. The change has been determined not to adversely affect the safe operation of the plant. Required Actions and their associated Completion Times are not initiating conditions for any accident previously evaluated. In addition, changes that are consistent with the ISTS have been previously evaluated and found not to adversely affect the safe operation of Westinghouse plants or the initiation of any accident previously evaluated. Based on the conclusions of the plant specific evaluation associated with the change and the evaluation performed in developing the ISTS, the proposed change does not result in operating conditions that will significantly increase the probability of initiating an analyzed event. In addition, the proposed change was evaluated to assure that it does not alter the safety analysis assumptions relative to mitigation of an accident or transient event and that the resulting requirements continue to ensure the necessary process variables, structures, systems, and components are maintained operable consistent with the safety analyses or that the plant is placed in an operating Mode where the process variable, structure, system, or component is no longer required operable. The consequences of an analyzed accident during the relaxed Completion Time are the same as the consequences during the existing Completion Time (i.e., initial plant conditions are the same). As a result, the consequences of any accident previously evaluated are not significantly increased. As such, the proposed change also does not result in operating conditions that will significantly increase the consequences of an analyzed event. Therefore, the change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the method governing normal plant operation. The Required Actions and associated Completion Times in the ISTS have been evaluated to ensure that no new accident initiators are introduced. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 3
**RELAXATION OF COMPLETION TIME**
(continued)

3. **Does this change involve a significant reduction in a margin of safety?**

The effect of the change relative to the safe operation of the plant was evaluated in the discussion associated with the change. The change has been determined not to adversely affect the safe operation of the plant. In addition, changes that are consistent with the ISTS have been previously evaluated and found not to adversely affect the safe operation of Westinghouse plants. Based on the conclusions of the plant specific evaluation associated with each change and the evaluation performed in developing the ISTS, the change has been determined to maintain plant operation within the assumptions of the applicable safety analyses. As such, the change does not result in operating conditions that significantly reduce any margin of safety. Therefore, the change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 4

***RELAXATION OF REQUIRED ACTION***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve relaxation of the Required Actions in the current Technical Specifications (CTS).

Upon discovery of a failure to meet a Limiting Condition for Operation (LCO), the ISTS specifies Required Actions to complete for the associated Conditions. Required Actions of the associated Conditions are used to establish remedial measures that must be taken in response to the degraded conditions. These actions minimize the risk associated with continued operation while providing time to repair inoperable features. Some of the Required Actions are modified to place the plant in a MODE in which the LCO does not apply. Adopting Required Actions from the ISTS is acceptable because the Required Actions take into account the operability status of redundant systems of required features, the capacity and capability of the remaining features, and the compensatory attributes of the Required Actions as compared to the LCO requirements. These changes are generally made to conform to NUREG-1431 and have been evaluated to not be detrimental to plant safety.

The effect of each change relative to the safe operation of the plant was evaluated in the discussion associated with the change. In addition, the proposed changes that are consistent with the ISTS have been previously evaluated by Westinghouse Electric Corp., the Westinghouse Owners Group, NEI, and the NRC in developing the ISTS and found not to adversely affect the safe operation of Westinghouse plants. In the Final Policy Statement on Technical Specification Improvements for Nuclear Power Reactors (58 FR 39132, 7/22/93), the NRC encourages licensees to update their Technical Specifications consistent with their vendor-specific ISTS and endorses the implementation of these new Technical Specifications by stating that implementation of the ISTS is expected to produce an improvement in the safety of nuclear power plants. Furthermore, the provisions of the ISTS have been adopted by many Westinghouse plants over the last 10 years. The combined operating experience of the plants that have implemented the ISTS also serves to demonstrate that the provisions of the ISTS do not adversely affect the safe operation of Westinghouse plants.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 4
**RELAXATION OF REQUIRED ACTION**
(continued)

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

The proposed change provides less restrictive Required Actions for operation of the facility. The effect of the change relative to the safe operation of the plant was evaluated in the discussion associated with the change. The change has been determined not to adversely affect the safe operation of the plant. Required Actions are not initiating conditions for any accident previously evaluated. In addition, changes that are consistent with the ISTS have been previously evaluated and found not to adversely affect the safe operation of Westinghouse plants. Based on the conclusions of the plant specific evaluation associated with the change and the evaluation performed in developing the ISTS, the proposed change does not result in operating conditions that will significantly increase the probability of initiating an analyzed event. The proposed change was also evaluated to assure that it does not alter the safety analysis assumptions relative to mitigation of an accident or transient event and that the resulting requirements continue to ensure the necessary process variables, structures, systems, and components are maintained operable consistent with the safety analyses or that the plant is placed in an operating Mode where the process variable, structure, system, or component is no longer required operable. In addition, the proposed change provides the appropriate remedial actions to be taken in response to the degraded condition considering the operability status of the redundant systems of required features, and the capacity and capability of remaining features while minimizing the risk associated with continued operation. As such the proposed change also does not result in operating conditions that will significantly increase the consequences of an analyzed event. Therefore, the change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. The Required Actions in the ISTS have been evaluated to ensure that no new accident initiators are introduced. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 4
**RELAXATION OF REQUIRED ACTION**
(continued)

3. **Does this change involve a significant reduction in a margin of safety?**

The effect of the change relative to the safe operation of the plant was evaluated in the discussion associated with the change. The change has been determined not to adversely affect the safe operation of the plant. In addition, changes that are consistent with the ISTS have been previously evaluated and found not to adversely affect the safe operation of Westinghouse plants. Based on the conclusions of the plant specific evaluation associated with each change and the evaluation performed in developing the ISTS, the change has been determined to maintain plant operation within the assumptions of the applicable safety analyses. As such, the change does not result in operating conditions that significantly reduce any margin of safety. Therefore, the change does not involve a significant reduction in a margin of safety.

## NO SIGNIFICANT HAZARDS DETERMINATION FOR LESS RESTRICTIVE CHANGES – CATEGORY 5

### *DELETION OF SURVEILLANCE REQUIREMENT*

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve deletion of Surveillance Requirements in the current Technical Specifications (CTS).

The CTS require safety systems to be tested and verified Operable prior to entering applicable operating conditions. The ISTS eliminates unnecessary CTS Surveillance Requirements that do not contribute to verification that the equipment used to meet the Limiting Condition for Operation (LCO) can perform its required functions. Therefore, appropriate equipment continues to be tested in a manner and at a frequency necessary to give confidence that the equipment can perform its assumed safety function. These changes are generally made to conform to NUREG-1431 and have been evaluated to not be detrimental to plant safety.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change deletes Surveillance Requirements. Surveillances are not initiators to any accident previously evaluated. Consequently, the probability of an accident previously evaluated is not significantly increased. The equipment specified in the LCO is still required to be OPERABLE and capable of performing the accident mitigation functions assumed in the accident analysis. As a result, the consequences of any accident previously evaluated are not significantly affected. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. The remaining Surveillance Requirements are consistent with industry practice and are considered to be sufficient to prevent the removal of the subject Surveillances from creating a new or different type of accident. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 5
**DELETION OF SURVEILLANCE REQUIREMENT**
(continued)

3. **Does this change involve a significant reduction in a margin of safety?**

The deleted Surveillance Requirements do not result in a significant reduction in the margin of safety. The change has been evaluated to ensure that the deleted Surveillance Requirements are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Therefore, appropriate equipment continues to be tested in a manner and at a frequency necessary to give confidence that the equipment can perform its assumed safety function. Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 6

***RELAXATION OF SURVEILLANCE REQUIREMENT ACCEPTANCE CRITERIA***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve the relaxation of Surveillance Requirements acceptance criteria in the current Technical Specifications (CTS).

The CTS require safety systems to be tested and verified Operable prior to entering applicable operating conditions. The ISTS eliminates or relaxes the Surveillance Requirement acceptance criteria that do not contribute to verification that the equipment used to meet the Limiting Condition for Operation (LCO) can perform its required functions. For example, the ISTS allows some Surveillance Requirements to verify Operability under actual or test conditions. Adopting the ISTS allowance for "actual" conditions is acceptable because required features cannot distinguish between an "actual" signal and a "test" signal. Also included are changes to CTS requirements that are replaced in the ITS with separate and distinct testing requirements which, when combined, include Operability verification of all Technical Specification required components for the features specified in the CTS. Adopting this format preference in the ISTS is acceptable because Surveillance Requirements that remain include testing of all previous features required to be verified OPERABLE. Changes that provide exceptions to Surveillance Requirements to provide for variations that do not affect the results of the test are also included in this category. These changes are generally made to conform to NUREG-1431 and have been evaluated to not be detrimental to plant safety.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change relaxes the acceptance criteria of Surveillance Requirements. Surveillances are not initiators to any accident previously evaluated. Consequently, the probability of an accident previously evaluated is not significantly increased. The equipment being tested is still required to be OPERABLE and capable of performing the accident mitigation functions assumed in the accident analysis. As a result, the consequences of any accident previously evaluated are not significantly affected. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 6
**RELAXATION OF SURVEILLANCE REQUIREMENT ACCEPTANCE CRITERIA**
(continued)

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **Does this change involve a significant reduction in a margin of safety?**

   The relaxed acceptance criteria for Surveillance Requirements do not result in a significant reduction in the margin of safety. The relaxed Surveillance Requirement acceptance criteria have been evaluated to ensure that they are sufficient to verify that the equipment used to meet the LCO can perform its required functions. Therefore, appropriate equipment continues to be tested in a manner that gives confidence that the equipment can perform its assumed safety function. Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 7

***RELAXATION OF SURVEILLANCE FREQUENCY***

The Beaver Valley Power Station is converting to the Improved Standard Technical Specifications (ISTS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Some of the proposed changes involve the relaxation of Surveillance Frequencies in the current Technical Specifications (CTS).

CTS and ISTS Surveillance Frequencies specify time interval requirements for performing surveillance testing. Increasing the time interval between Surveillance tests in the ISTS results in decreased equipment unavailability due to testing which also increases equipment availability. In general, the ISTS contain test frequencies that are consistent with industry practice or industry standards for achieving acceptable levels of equipment reliability. Adopting testing practices specified in the ISTS is acceptable based on similar design, like-component testing for the system application and the availability of other Technical Specification requirements which provide regular checks to ensure limits are met. Relaxation of Surveillance Frequency may also include changes such as the addition of Surveillance Notes which allow testing to be delayed until appropriate unit conditions for the test are established, or exempt testing in certain MODES or specified conditions in which the testing can not be performed.

Reduced testing can result in a safety enhancement because the unavailability due to testing is reduced and; in turn, reliability of the affected structure, system or component should remain constant or increase. Reduced testing is acceptable where operating experience, industry practice or the industry standards such as manufacturers' recommendations have shown that these components usually pass the Surveillance when performed at the specified interval, therefore the frequency is acceptable from a reliability standpoint. Surveillance Frequency changes to incorporate alternate train testing have been shown to be acceptable where other qualitative or quantitative test requirements are required which are established predictors of system performance. Surveillance Frequency extensions can be based on NRC-approved topical reports. The NRC staff has accepted topical report analyses that bound the plant-specific design and component reliability assumptions. These changes are generally made to conform to NUREG-1431 and have been evaluated to not be detrimental to plant safety.

In accordance with the criteria set forth in 10 CFR 50.92, FirstEnergy Nuclear Operating Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed change relaxes Surveillance Frequencies. The relaxed Surveillance Frequencies have been established based on achieving acceptable levels of equipment reliability.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR
LESS RESTRICTIVE CHANGES – CATEGORY 7
**RELAXATION OF SURVEILLANCE FREQUENCY**
(continued)

Consequently, equipment which could initiate an accident previously evaluated will continue to operate as expected and the probability of the initiation of any accident previously evaluated will not be significantly increased. The equipment being tested is still required to be OPERABLE and capable of performing any accident mitigation functions assumed in the accident analysis. As a result, the consequences of any accident previously evaluated are not significantly affected. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **Does this change involve a significant reduction in a margin of safety?**

   The relaxed Surveillance Frequencies do not result in a significant reduction in the margin of safety. The relaxation in the Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. Thus, appropriate equipment continues to be tested at a Frequency that gives confidence that the equipment can perform its assumed safety function when required. Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR

***SPECIFIC LESS RESTRICTIVE CHANGES***

None.