Pacific Gas and Electric Company

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February 13, 2004

PG&E Letter DCL-04-013

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555-0001

Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
License Amendment Request 03-17,
Common Stars License Amendment
Implementation of WCAP-14333 and WCAP-15376, RTS and ESFAS Test Times, Completion Times, and Surveillance Test Intervals

Dear Commissioners and Staff:

In accordance with 10 CFR 50.90, enclosed is an application for amendment to Facility Operating License Nos. DPR-80 and DPR-82 for Units 1 and 2 of the Diablo Canyon Power Plant, respectively. The proposed license amendment would revise Technical Specification (TS) 3.3.1, Reactor Trip System (RTS) Instrumentation, TS 3.3.2, Engineered Safety Feature Actuation System (ESFAS) Instrumentation, and TS 3.3.6, Containment Ventilation Isolation Instrumentation, to adopt completion time, test bypass time, and surveillance frequency changes approved by the NRC in WCAP-14333-P-A, Revision 1, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times," dated October 1998, and WCAP-15376-P-A, Revision 1, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," dated March 2003.

This LAR proposes changes to several TS 3.3.1 and TS 3.3.2 pages also proposed for change in PG&E Letter DCL-02-125, "License Amendment Request 02-06, Revisions to Technical Specifications 3.3.1, 'Reactor Trip System (RTS) Instrumentation,' and 3.3.2, 'Engineered Safety Features Actuation System (ESFAS) Instrumentation,'" and PG&E Letter DCL-03-111, "License Amendment Request 03-12, Revision to Technical Specifications 3.3.1, 'RTS Instrumentation,' and 3.3.2, 'ESFAS Instrumentation.'" If approved prior to approval of this LAR, new TS markups will be provided.

A001

As discussed in Enclosure 1, this amendment application is consistent with Industry/Technical Specification Task Force (TSTF) Standard TS (STS) Change Traveler 411, Revision 1, "Surveillance Test Interval Extensions for Components of the Reactor Protection System (WCAP-15376-P)," and Industry/TSTF STS Change Traveler 418, Revision 2, "RPS and ESFAS Test Times and Completion Times (WCAP-14333)."

PG&E is submitting this license amendment application in conjunction with an industry consortium of six plants as a result of a mutual agreement known as Strategic Teaming and Resource Sharing (STARS). The STARS group consists of the six plants operated by TXU Energy, AmerenUE, Wolf Creek Nuclear Operating Corporation, Pacific Gas and Electric Company, STP Nuclear Operating Company, and Arizona Public Service Company.

AmerenUE's Callaway Plant is the lead STARS plant for the proposed license amendment and other members of the STARS group can also be expected to submit a license amendment request similar to this one. The other license amendment requests will be submitted on a parallel basis within a short period of time of each other, with plant-specific information presented within brackets (i.e., within [ ]) in Enclosure 1 (other than TS limiting condition of operation numbers which vary between STS of NUREG-0452 and NUREG-1431). All other enclosures are plant-specific in nature.

Enclosures 1 through 6 provide the evaluation, markup of TS, retyped TS, proposed TS bases changes, summary of regulatory commitments, and topical report applicability determination, respectively, in support of this amendment request. Enclosure 4 provides the marked-up TS Bases pages for information only. TS Bases changes will be implemented in accordance with TS 5.5.14, "Technical Specification Bases Control Program," at the time this amendment is implemented. Commitments based on the Regulatory Guide 1.177 Tier 2 evaluation are contained in Enclosure 5.

Westinghouse has determined that information contained in Enclosure 6 is proprietary, and is thereby supported by an affidavit signed by Westinghouse, the owner of the information. The affidavit sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of 10 CFR 2.790. Accordingly, it is respectfully requested that the information that is proprietary to Westinghouse be withheld from public disclosure in accordance with 10 CFR 2.790. This letter transmits proprietary (Enclosure 6A) and nonproprietary (Enclosure 6B) copies of Enclosure 6.

Enclosure 6C contains Westinghouse authorization letter CAW-03-1747, its accompanying affidavit, Proprietary Information Notice, and Copyright Notice. Correspondence with respect to the copyright or proprietary aspects of the items listed above or the supporting Westinghouse affidavit should reference CAW-03-1747 and should be addressed to John Galembush, Manager of Regulatory Compliance and Plant Licensing, Westinghouse Electric Company, P.O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

PG&E has determined that this LAR does not involve a significant hazards consideration as determined per 10 CFR 50.92. Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of this amendment.

The changes in this LAR are not required to address an immediate safety concern. PG&E requests approval of this LAR no later than January 20, 2005. PG&E requests the LAR be made effective upon NRC issuance, to be implemented within 90 days from the date of issuance.

If you have any questions or require additional information, please contact Stan Ketelsen at (805) 545-4720.

Sincerely,

David H. Oatley
Vice President and General Manager – Diablo Canyon

mjr/4557
Enclosures
cc: Edgar Bailey, DHS
Bruce S. Mallett
David L. Proulx
Diablo Distribution
cc/enc: Girija S. Shukla

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of PACIFIC GAS AND ELECTRIC COMPANY	)	Docket No. 50-275 Facility Operating License No. DPR-80
Diablo Canyon Power Plant Units 1 and 2	)	Docket No. 50-323 Facility Operating License No. DPR-82

AFFIDAVIT

David H. Oatley, of lawful age, first being duly sworn upon oath says that he is Vice President and General Manager – Diablo Canyon of Pacific Gas and Electric Company; that he has executed LAR 03-17 on behalf of said company with full power and authority to do so; that he is familiar with the content thereof; and that the facts stated therein are true and correct to the best of his knowledge, information, and belief.

David H. Oatley
Vice President and General Manager – Diablo Canyon

Subscribed and sworn to before me this 13th day of February 2004.

Notary Public
County of San Luis Obispo
State of California

CHUCK MACKEY
Commission # 1397547
Notary Public - California
San Luis Obispo County
My Comm. Expires Feb 1, 2007

Attachment 6C
PG&E Letter DCL-04-013

TOPICAL REPORT APPLICABILITY DETERMINATION
PROPRIETARY AFFIDAVIT

Westinghouse

Westinghouse Electric Company
Nuclear Services
P.O. Box 355
Pittsburgh, Pennsylvania 15230-0355
USA

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

Direct tel: (412) 374-5036
Direct fax: (412) 374-4011
e-mail: galem1js@westinghouse.com

Our ref: CAW-03-1747

December 3, 2003

APPLICATION FOR WITHHOLDING PROPRIETARY INFORMATION FROM PUBLIC DISCLOSURE

Subject: WCAP-15376 Implementation Guidelines Approach to Address the Conditions and Limitations in the NRC's Safety Evaluation (Proprietary)

The proprietary information for which withholding is being requested in the above-referenced report is further identified in Affidavit CAW-03-1747 signed by the owner of the proprietary information, Westinghouse Electric Company LLC. The affidavit, which accompanies this letter, sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of 10 CFR Section 2.790 of the Commission's regulations.

Accordingly, this letter authorizes the utilization of the accompanying affidavit by Pacific Gas & Electric Company.

Correspondence with respect to the proprietary aspects of the application for withholding or the Westinghouse affidavit should reference this letter, CAW-03-1747, and should be addressed to the undersigned.

Very truly yours,

J. S. Galembush, Acting Manager
Regulatory Compliance and Plant Licensing

Enclosures

cc: D. Holland
B. Benney
E. Peyton

CAW-03-1747

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared J. S. Galembush, who, being by me duly sworn according to law, deposes and says that he is authorized to execute this Affidavit on behalf of Westinghouse Electric Company LLC (Westinghouse), and that the averments of fact set forth in this Affidavit are true and correct to the best of his knowledge, information, and belief:

J. S. Galembush, Acting Manager
Regulatory Compliance and Plant Licensing

Sworn to and subscribed
before me this 4th day
of December, 2003

Sharon L Fiori

Notary Public

SHARON L. FIORI
NOTARY PUBLIC
COMMONWEALTH OF PENNSYLVANIA

Notarial Seal
Sharon L. Fiori, Notary Public
Monroeville Boro, Allegheny County
My Commission Expires January 29, 2007
Member, Pennsylvania Association Of Notaries

(1) I am Acting Manager, Regulatory Compliance and Plant Licensing, in Nuclear Services, Westinghouse Electric Company LLC (Westinghouse), and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing and rule making proceedings, and am authorized to apply for its withholding on behalf of Westinghouse.

(2) I am making this Affidavit in conformance with the provisions of 10 CFR Section 2.790 of the Commission's regulations and in conjunction with the Westinghouse "Application for Withholding" accompanying this Affidavit.

(3) I have personal knowledge of the criteria and procedures utilized by Westinghouse in designating information as a trade secret, privileged or as confidential commercial or financial information.

(4) Pursuant to the provisions of paragraph (b)(4) of Section 2.790 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.

(i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse.

(ii) The information is of a type customarily held in confidence by Westinghouse and not customarily disclosed to the public. Westinghouse has a rational basis for determining the types of information customarily held in confidence by it and, in that connection, utilizes a system to determine when and whether to hold certain types of information in confidence. The application of that system and the substance of that system constitutes Westinghouse policy and provides the rational basis required.

Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential competitive advantage, as follows:

(a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of

Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

(b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage, e.g., by optimization or improved marketability.

(c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.

(d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.

(e) It reveals aspects of past, present, or future Westinghouse or customer funded development plans and programs of potential commercial value to Westinghouse.

(f) It contains patentable ideas, for which patent protection may be desirable.

There are sound policy reasons behind the Westinghouse system which include the following:

(a) The use of such information by Westinghouse gives Westinghouse a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Westinghouse competitive position.

(b) It is information that is marketable in many ways. The extent to which such information is available to competitors diminishes the Westinghouse ability to sell products and services involving the use of the information.

(c) Use by our competitor would put Westinghouse at a competitive disadvantage by reducing his expenditure of resources at our expense.

(d) Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving Westinghouse of a competitive advantage.

(e) Unrestricted disclosure would jeopardize the position of prominence of Westinghouse in the world market, and thereby give a market advantage to the competition of those countries.

(f) The Westinghouse capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.

(iii) The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR Section 2.790, it is to be received in confidence by the Commission.

(iv) The information sought to be protected is not available in public sources or available information has not been previously employed in the same original manner or method to the best of our knowledge and belief.

(v) The proprietary information sought to be withheld in this submittal is that which is appropriately marked in WCAP-15376 Implementation Guidelines Approach to Address the Conditions and Limitations in the NRC's Safety Evaluation on behalf of the Westinghouse Owners Group by Westinghouse, being transmitted by the Westinghouse Owners Group letter and Application for Withholding Proprietary Information from Public Disclosure to the Document Control Desk. The proprietary information as submitted for use by the Westinghouse Owners Group is applicable to other licensee submittals.

This information is part of that which will enable Westinghouse to:

(a) Provide risk-informed assessment of the RTS and ESFAS to extend the interval for surveillance testing.

(b) Provide licensing defense services.

Further this information has substantial commercial value as follows:

(a) Westinghouse plans to sell the use of similar information to its customers for purposes of extending surveillance testing intervals

(b) Westinghouse can sell support and defense of extending surveillance testing intervals.

Public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Westinghouse because it would enhance the ability of competitors to provide similar assessments and licensing defense services for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others to use the information to meet NRC requirements for licensing documentation without purchasing the right to use the information.

The development of the technology described in part by the information is the result of applying the results of many years of experience in an intensive Westinghouse effort and the expenditure of a considerable sum of money.

In order for competitors of Westinghouse to duplicate this information, similar technical programs would have to be performed and a significant manpower effort, having the requisite talent and experience, would have to be expended.

Further the deponent sayeth not.

PROPRIETARY INFORMATION NOTICE

Transmitted herewith are proprietary and/or non-proprietary versions of documents furnished to the NRC in connection with requests for generic and/or plant-specific review and approval.

In order to conform to the requirements of 10 CFR 2.790 of the Commission's regulations concerning the protection of proprietary information so submitted to the NRC, the information which is proprietary in the proprietary versions is contained within brackets, and where the proprietary information has been deleted in the non-proprietary versions, only the brackets remain (the information that was contained within the brackets in the proprietary versions having been deleted). The justification for claiming the information so designated as proprietary is indicated in both versions by means of lower case letters (a) through (f) located as a superscript immediately following the brackets enclosing each item of information being identified as proprietary or in the margin opposite such information. These lower case letters refer to the types of information Westinghouse customarily holds in confidence identified in Sections (4)(ii)(a) through (4)(ii)(f) of the affidavit accompanying this transmittal pursuant to 10 CFR 2.790(b)(1).

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EVALUATION

1.0 Description

[This letter is a request to amend Operating Licenses DPR-80 and DPR-82 for Units 1 and 2 of the Diablo Canyon Power Plant (DCPP), respectively.]

The proposed amendment would revise Technical Specification (TS) 3.3.1, Reactor Trip System (RTS) Instrumentation, TS 3.3.2, Engineered Safety Feature Actuation System (ESFAS) Instrumentation, and TS 3.3.6, Containment Ventilation Isolation Instrumentation, to adopt the Completion Time, test bypass time, and Surveillance Frequency changes approved by the NRC in WCAP-14333-P-A, Revision 1, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times," October 1998 (Reference 1), and WCAP-15376-P-A, Revision 1, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," March 2003 (Reference 2). This amendment application is consistent with the following NRC-approved travelers: Industry/Technical Specification Task Force (TSTF) Standard TS (STS) Change Traveler 411, Revision 1, "Surveillance Test Interval Extensions for Components of the Reactor Protection System (WCAP-15376-P)," and Industry/TSTF STS Change Traveler 418, Revision 2, "RPS and ESFAS Test Times and Completion Times (WCAP-14333)," References 3 and 4, respectively. All references cited in this Evaluation are listed in Section 7.0.

2.0 Proposed Change

The following categories of changes are proposed for TS 3.3.1, 3.3.2, [and 3.3.6]:

a) The allowed Completion Time to restore an inoperable RTS or ESFAS analog channel, before it must be placed in the tripped condition [bypassed condition for Steam Line Isolation - Containment Pressure - High-High and Containment Isolation – Phase B Isolation – Containment Pressure High-High], is increased from 6 hours to 72 hours;

b) The allowed time for an inoperable RTS or ESFAS analog channel to be bypassed [ ] for testing other analog channels is increased from 4 to 12 hours;

c) The allowed Completion Time to restore an inoperable train of solid state protection system (SSPS) logic (TS 3.3.1 and TS 3.3.2) or actuation relays (TS 3.3.2), before the plant must be shut down, is increased from 6 hours to 24 hours;

d) The allowed time for one reactor trip breaker (RTB) train to be bypassed for surveillance testing is increased from 2 hours to 4 hours;

e) The allowed Completion Time to restore an inoperable RTB train, before the plant must be shut down, is increased from 1 hour to 24 hours;

f) The surveillance test interval for the RTB TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT) is increased from 31 days on a STAGGERED TEST BASIS to 62 days on a STAGGERED TEST BASIS;

g) The surveillance test interval for the SSPS ACTUATION LOGIC TEST and MASTER RELAY TEST is increased from 31 days on a STAGGERED TEST BASIS to 92 days on a STAGGERED TEST BASIS; and

h) The CHANNEL OPERATIONAL TEST (COT) surveillance test interval in TS 3.3.1 and TS 3.3.2 is increased from 92 days to 184 days

Enclosure 2 contains the TS mark-ups for the above changes. The following specific changes are included in Enclosure 2:

1) Modified bypass testing Note and extended Completion Times for TS 3.3.1 Required Actions D.1.1, D.1.2, D.2.1, and D.3

   Power Range Neutron Flux - High {RTS Function 2.a};

2) Modified bypass testing Note and extended Completion Times for TS 3.3.1 Required Actions E.1 and E.2

   Power Range Neutron Flux - Low {RTS Function 2.b}, Power Range Neutron Flux [Rate - High Positive Rate and High Negative Rate {RTS Functions 3.a and 3.b}], Overtemperature ΔT {RTS Function 6}, Overpower ΔT {RTS Function 7}, Pressurizer Pressure - High {RTS Function 8.b}, and Steam Generator Water Level Low-Low [{RTS Function 14.a}];

3) Modified bypass testing Note and extended Completion Times for TS 3.3.1 Required Actions M.1 and M.2

   Pressurizer Pressure - Low {RTS Function 8.a}, Pressurizer Water Level - High {RTS Function 9}, Reactor Coolant Flow - Low {RTS Function 10}, Undervoltage RCPs {RTS Function 12}, and Underfrequency RCPs {RTS Function 13};

4) Modified bypass testing Note and extended Completion Times for TS 3.3.1 Required Actions O.1 and O.2

   Turbine Trip Low [Auto-Stop] Oil Pressure {RTS Function 16.a};

5) Extended Completion Times for TS 3.3.1 Required Actions P.1 and P.2

Turbine Trip Turbine Stop Valve Closure {RTS Function 16.b};

6) Extended Completion Times for TS 3.3.1 Required Actions Q.1 and Q.2

Safety Injection Input from ESFAS {RTS Function 17} and Automatic Trip Logic {RTS Function 21);

7) Modified bypass testing Note 1, [deleted bypass Note 2], and extended Completion Times for TS 3.3.1 Required Actions R.1 and R.2

Reactor Trip Breakers (RTBs) {RTS Function 19};

[8) Modified bypass testing Note and Extended Completion Times for TS 3.3.1 Required Actions X.1, X.2, and X.3

Steam Generator Water Level Low-Low Trip Time Delay {RTS Function 14.b};

9) Added new TS 3.3.1 Condition N to retain the current Required Actions and Completion Times for Reactor Coolant Pump (RCP) Breaker Position {RTS Function 11} since the Reactor Coolant Pump (RCP) Breaker Position logic function is not covered by WCAP-14333-P-A or WCAP-15376-P-A;]

10) Extended SR 3.3.1.4, RTB TADOT;

11) Extended SR 3.3.1.5, SSPS ACTUATION LOGIC TEST;

12) Extended SR 3.3.1.7 and SR 3.3.1.8, RTS instrumentation COTs;

13) Extended Completion Times for TS 3.3.2 Required Actions [C.1, C.2.1, and C.2.2]

Automatic Actuation Logic and Actuation Relays (SSPS) for:

Safety Injection {ESFAS Function 1.b}, Containment Spray {ESFAS Function 2.b}, Containment Isolation - Phase A Isolation {ESFAS Function 3.a.(2)}, and Containment Isolation - Phase B Isolation {ESFAS Function 3.b.(2)} [ ];

14) Modified bypass testing Note and extended Completion Times for TS 3.3.2 Required Actions D.1, D.2.1, and D.2.2

Safety Injection on [Pressurizer Pressure - Low {ESFAS Function 1.d} and Steam Line Pressure - Low {ESFAS Function 1.e}; Steam Line Isolation on Steam Line Pressure - Low {ESFAS Function 4.d.(1)} and Negative Rate - High {ESFAS Function 4.d.(2)}; Auxiliary Feedwater on SG Water Level-Low Low {ESFAS Functions 6.d.(1)};]

15) Modified bypass testing Note and extended Completion Times for TS 3.3.2 Required Actions E.1, E.2.1, and E.2.2

[Steam Line Isolation on Containment Pressure - High - High {ESFAS Function 4.c};]

16) Extended Completion Times for TS 3.3.2 Required Actions G.1, G.2.1, and G.2.2

Automatic Actuation Logic and Actuation Relays (SSPS) for Steam Line Isolation {ESFAS Function 4.b} and Auxiliary Feedwater {ESFAS Function 6.b};

[17) Extended Completion Times for TS 3.3.2 Required Actions H.1 and H.2

Turbine Trip and Feedwater Isolation on Automatic Actuation Logic and Actuation Relays {ESFAS Function 5.a}];

18) Modified bypass testing Note and extended Completion Times for TS 3.3.2 Required Action I.1 and I.2

[Auxiliary Feedwater on Undervoltage Reactor Coolant Pump {ESFAS Function 6.g};

19) Modified bypass testing Note and extended Completion Times for TS 3.3.2 Required Action J.1 and J.2

Turbine Trip and Feedwater Isolation on SG Water Level - High High (P-14) {ESFAS Function 5.b};

20) Modified bypass testing Note and extended Completion Times for TS 3.3.2 Required Actions M.1, M.2, M.3.1, and M.3.2

Auxiliary Feedwater on Steam Generator Water Level Low-Low Trip Time Delay (TTD) {ESFAS Functions 6.d.(2)};

21) Modified bypass testing Note and extended Completion Times for TS 3.3.2 Required Actions O.1, O.2.1, and O.2.2

Safety Injection on Containment Pressure-High {ESFAS Function 1.c}];

22) Extended SR 3.3.2.2 and SR 3.3.2.4, SSPS ACTUATION LOGIC TEST and MASTER RELAY TEST [ ];

23) Extended SR 3.3.2.5, ESFAS instrumentation COTs;

24) [Modified bypass testing Note and extended Completion Times for TS 3.3.2 Required Actions P.1, P.2.1, and P.2.2

Containment Spray on Containment Pressure-High-High {ESFAS Function 2.c.(1)} and Containment Isolation on Phase B Isolation - Containment Pressure-High-High {ESFAS Function 3.b.(3)}; and

25) New SR Note for SR 3.3.6.2 and SR 3.3.6.3 and extended SR 3.3.6.2 and SR 3.3.6.3, SSPS ACTUATION LOGIC TEST and MASTER RELAY TEST]

The Corresponding TS Bases are also revised in Enclosure 4 to be consistent with the above changes.

3.0 Background

Over the past several years the Westinghouse Owners Group (WOG) completed a series of topical reports that document the relaxation of RTS and ESFAS test times, Completion Times (CTs), and surveillance test intervals (STIs) for the protection system instrumentation. The relaxations were justified by an analysis of the protection system reliability and the impact of that reliability on the overall plant risk. The original study was identified by the acronym TOP (taken from Technical Specification Optimization Program) as documented in the WCAP-10271-P-A series of reports. Those changes were implemented at [DCPP via License Amendment (LA) 36/35 for WCAP 10271, LA 61/60 for supplements 1 and 2 to WCAP-10271, and LA 84/83 for the Eagle 21 upgrade, References 5, 6, and 7, respectively. When reviewing risk metric results, DCPP's current licensing basis is that of a "TOP" plant.]

Fault tree models of the protection system instrumentation were used to calculate the unavailability sensitivity to test and maintenance time allowances and frequencies. The changes in RTS and ESFAS unavailability were then used in a risk model to predict changes in risk as the test and maintenance time allowances and frequencies were relaxed. Differences in analysis methods from the TOP WCAP-10271-P-A (hereafter referred to as WCAP-10271) series of reports are discussed in Section 7.1 of WCAP-14333-P-A Revision 1 and in Section 8.3.5 of WCAP-15376-P-A Revision 1.

The approach used in WCAP-14333-P-A Revision 1 (hereafter referred to as WCAP-14333) and WCAP-15376-P-A Revision 1 (hereafter referred to as WCAP-15376) is consistent with the approach established in the TOP program. This includes the fault tree models, signals, component reliability database, and most of the test and maintenance assumptions. The methodology used in the WCAP-10271 studies was applied to a representative set of RTS and ESFAS functions using the Vogtle probabilistic risk assessment (PRA) model and revised unavailability data. The work documented in WCAP-14333 uses a different common cause failure modeling approach for analog channels and includes more realistic assumptions related to the component unavailability due to maintenance activities based on a survey of WOG plants. Operator actions to either manually trip the reactor or initiate safety injection are also modeled in WCAP-14333. In addition, credit for auxiliary feedwater pump start from the anticipated transient without scram (ATWS) mitigating system actuation circuitry (AMSAC) was taken. More discussion of these differences is contained in Sections 7 and 8 of WCAP-14333. The relaxations that are justified in WCAP-14333 are summarized below:

Summary of WCAP-14333 RTS and ESFAS Completion Time and Bypass Test Time Changes – Solid State Protection System		
Component	Completion Time	Bypass Test Time
Analog Channels	6+6 hours to 72+6 hours	4 hours to 12 hours
Logic Train	6+6 hours to 24+6 hours	No relaxation*
Actuation relays	6+6 hours to 24+6 hours	No relaxation*

*No relaxation beyond TOP (WCAP-10271 and its supplements)

WCAP-14333 was submitted for NRC review with WOG Letter OG-95-51 dated June 20, 1995. The NRC issued a Safety Evaluation on July 15, 1998, approving WCAP-14333. These improvements will allow additional time to perform maintenance and test activities, enhance safety, provide additional operational flexibility, and reduce the potential for forced outages related to compliance with the RTS and ESFAS instrumentation TS. Industry information has shown that a significant number of trips that have occurred are related to instrumentation test and maintenance activities, indicating that these activities should be completed with caution and sufficient time should be available to complete these activities in an orderly and effective manner.

Southern Nuclear Operating Company submitted a License Amendment Request (LAR) on October 13, 1999, for the Vogtle Units 1 and 2 to adopt the relaxations that were generically approved in WCAP-14333. As a result of the NRC review of this application, incremental conditional large early release probability (ICLERP) values were developed generically for all WOG plants (see Reference 10 for the Vogtle

amendment correspondence). Amendments 116 and 94 were issued for Vogtle approving the changes proposed in WCAP-14333.

WOG Letter OG-00-112, dated November 8, 2000, transmitted WCAP-15376, Revision 0 to the NRC for review and approval. WCAP-15376 expanded upon the groundwork laid by WCAP-14333, but used updated component failure probability data (WCAP-15376 Section 8.2) and made some changes to the fault tree models (WCAP-15376 Section 8.3). Using these modifications, the changes previously approved in WCAP-14333 were quantified as the base case for WCAP-15376. Section 8.4 of WCAP-15376 provides the risk metrics for this change and demonstrates that the acceptance criteria of Regulatory Guide (RG) 1.174 and RG 1.177 are satisfied.

WCAP-15376 provides the technical justification for the following RTS Instrumentation (TS 3.3.1), ESFAS Instrumentation (TS 3.3.2), [and Containment Ventilation Isolation Instrumentation (TS 3.3.6)] TS changes:

Summary of WCAP-15376 RTS and ESFAS STI and CT Changes – Solid State Protection System		
Component	Surveillance Test Intervals	Completion Times and Bypass Times
Logic Train	2 months to 6 months	No changes
Master Relays	2 months to 6 months	No changes
Analog Channels	3 months to 6 months	No changes
Reactor Trip Breakers	2 months to 4 months	CT: 1 hour to 24 hours Bypass Time: 2 hours to 4 hours

The NRC approved WCAP-15376 by letter dated December 20, 2002.

The AMSAC system is included in [DCPP's Maintenance Rule Program with an assigned reliability performance criterion of less than two maintenance preventable functional failures in 24 months. AMSAC has low risk achievement worth (1.36) and low risk reduction worth (1.0003). AMSAC is functionally tested every 24 months and the analog channel inputs are calibrated quarterly. DCPP's AMSAC design is discussed in the Updated Final Safety Analysis Report Section 7.6.1.4.]

4.0 Technical Analysis

A survey was provided to all WOG members to determine their needs with respect to instrumentation test times, maintenance times, and maintenance frequencies, in

addition to information regarding plant operation such as reactor trip and spurious safety injection events. From this information the TS changes that were evaluated were identified. The PRA, benefits of the program and conclusions, and the relationship of the TS changes to the analyses are discussed in WCAP-14333 and WCAP-15376.

In order to model the CTs in the fault trees to determine the impact of the changes on signal unavailabilities, several parameters were specified for component test and maintenance unavailabilities. These are the test frequencies and durations discussed in Section 5.1 of WCAP-14333, the maintenance frequencies and durations discussed in Section 5.2 of WCAP-14333, and the test and maintenance activities discussed in Section 7.2 of WCAP-15376.

The changes being considered in this analysis were evaluated consistent with the three-tiered approach currently defined in RG 1.177. The first tier addresses PRA insights and includes the risk analyses and sensitivity analyses to support the completion time and bypass test time changes. The second tier addresses avoidance of risk-significant plant configurations. The third tier addresses risk-informed plant configuration control and management.

Tier 1, PRA Capability and Insights

WCAP-14333

WCAP-14333 originally provided only the impact of the requested changes on core damage frequency (ΔCDF) for two-out-of-four (2/4) and two-out-of-three (2/3) actuation logic. In response to an NRC request for additional information (RAI) letter, RAI Questions 11 and 13 in WOG Letter OG-96-110 (Reference 9), the WOG provided the impact of the requested changes on incremental conditional core damage probability (ICCDP) for various components in maintenance and the change in large early release frequency (ΔLERF) for 2/4 and 2/3 actuation logic. Also, in response to an NRC RAI during the review of Southern Nuclear's amendment request implementing these changes for the Vogtle Units 1 and 2, ICLERPs for various components in maintenance were provided.

The impact of the proposed changes on CDF and LERF are provided in TSTF-418, Revision 2, Table 1.3 (which presents the same information as that contained in Table 8.4 of WCAP-14333) and Table 1.4 (which presents the same information as that contained in the response to RAI Question 13 in OG-96-110), respectively. The CDF and LERF values are provided for pre-TOP, TOP, and the WCAP-14333 proposed changes. The ΔCDF and ΔLERF values are also provided referenced to pre-TOP and TOP conditions. The results of a sensitivity analysis are also provided that credit a 0.5 per year reduction in reactor trip frequency due to fewer analog channel tests (trip reduction originally postulated for the WCAP-10271 channel operational test interval increase from monthly to quarterly). The ΔCDF and

ΔLERF values are provided for both 2/4 and 2/3 logic. The ICCDP and ICLERP values are provided in Table 1.5 of TSTF-418, Revision 2 (from RAI Question 11 in OG-96-110 and from Reference 10). The ICCDP and ICLERP values are provided only for 2/3 logic, but the results envelop the 2/4 logic.

WCAP-15376

Risk analysis results for WCAP-15376 are discussed in Section 8.4 of that topical report. Comparisons are presented in Tables 8.29 (ΔCDF) and 8.32 (ΔLERF) to a base case which represents the changes previously approved under WCAP-14333. In response to an NRC RAI letter, RAI Questions 4 and 11 in WOG Letter OG-02-002 (Reference 11), the WOG provided the impact of the requested Completion Time change (24 hour CT plus 6 hours to reach MODE 3, for a total of 30 hours) on ICCDP and ICLERP for a RTB in preventive maintenance (PM) or in corrective maintenance (CM), with the associated logic train inoperable, for the bounding 2/3 logic. Since these incremental risk metrics are met for a 30-hour maintenance time, they will also be met for a 4-hour bypass test time.

Combined Risk Metric Results

Risk Metric	Acceptance Criterion	Change from WCAP-10271 to WCAP-14333		Change from WCAP-14333 to WCAP-15376	
ΔCDF per year	< 1E-06	2/4 logic 3.5E-07	2/3 logic 6.1E-07	2/4 logic 8.0E-07	2/3 logic 8.5E-07
ICCDP	< 5E-07	Ranges from 4.4E-07 (logic train in maintenance) to 5.5E-10 (SG level channel in test)		RTB in PM - 3.20E-07 RTB in CM - 3.22E-07	
ΔLERF per year	< 1E-07	2/4 logic 2.0E-08	2/3 logic 2.2E-08	2/4 logic 3.09E-08	2/3 logic 5.68E-08
ICLERP	< 5E-08	Ranges from 3.0E-08 (logic train in maintenance) to 1.1E-11 (SG level channel in test)		RTB in PM - 2.41E-08 RTB in CM - 2.42E-08	

The ICCDP and ICLERP values are situational in nature, depending on the particular component under test or maintenance. The acceptance criteria for these incremental risk metrics are satisfied. The ΔCDF and ΔLERF values are cumulative from the current licensing basis (WCAP-10271) to the proposed state (WCAP-15376). The ΔLERF acceptance criterion is satisfied. From the above table, the ΔCDF acceptance criterion going from WCAP-10271 to WCAP-15376 is slightly exceeded. To address this, Section 8.4.4 and Table 8.33 of WCAP-15376

discuss the cumulative ΔCDF from pre-TOP to WCAP-15376 conditions using the sensitivity analysis values from Table 8.4 of WCAP-14333 for 2/4 logic and 2/3 logic combined with the ΔCDF values from Table 8.29 of WCAP-15376 for 2/4 and 2/3 logic. The cumulative ΔCDF for the 2/4 logic in Table 8.33 of WCAP-15376 is 5.7E-07 per year meeting the ΔCDF acceptance criterion. The cumulative ΔCDF for the 2/3 logic in Table 8.33 of WCAP-15376 is 1.1E-06 per year slightly exceeding the ΔCDF acceptance criterion. However, that ΔCDF of 1.1E-06 per year includes the cumulative impact of changing from the pre-TOP to WCAP-15376 conditions. Pre-TOP conditions are given in Table 1.1 of WCAP-15376. [Since DCPP is changing only from the TOP to WCAP-15376 conditions, the ΔCDF acceptance criterion is satisfied since DCPP is currently licensed with quarterly COTs and 6-hour Completion Times, (i.e., PG&E is requesting less of a delta than the pre-TOP to WCAP-15376 change).] Another supplemental consideration supporting compliance with the ΔCDF acceptance criterion is the shutdown risk avoided with extended CTs discussed in Section 8.4 of WCAP-14333 and Section 8.7 of WCAP-15376.

Tier 2, Avoidance of Risk-Significant Plant Configurations

Tier 2 requires an examination of the need to impose additional restrictions when operating under the proposed CTs in order to avoid risk-significant equipment outage configurations. Therefore, the resulting Tier 2 restrictions to be imposed for the two topical reports are very similar.

WCAP-14333

Consistent with the guidance in Regulatory Position C.2.3 in RG 1.177, Westinghouse performed an evaluation of equipment according to its contribution to plant risk while the equipment covered by the proposed CT changes is out of service for test or maintenance. This evaluation was documented in the response to RAI Question 18 in Westinghouse Letter OG-96-110 (Reference 9). Westinghouse performed an importance analysis for 25 top events in the event trees for each of the test or maintenance configurations associated with the proposed TS changes. This analysis determined the system importances for plant configurations with no ongoing test and maintenance activities (all components available) and for plant configurations with ongoing test or maintenance activities individually on the analog channels, logic trains, master relays, and slave relays. With test or maintenance activities in progress, it is assumed that the corresponding component or train will be unavailable. The system importances for these configurations are provided in Table Q18.1 of the response to RAI Question 18. The importances were compared between the cases with individual components unavailable and all components available. For the cases of the analog channels, master relays, and slave relays, the importance rankings among the systems involved did not change. For the case of an SSPS logic train in maintenance, several systems had a relatively significant increase in their importance ranking. Those systems were auxiliary feedwater

(AFW), reactor trip, high pressure injection, low pressure injection, and containment cooling.

In addition, as discussed previously, the response to RAI Question 11 in Reference 9 documented ICCDP values for the various test and maintenance configurations that the plant may enter for the subject CT extensions. This information is provided in Table Q11.1 of the response to RAI Question 11. The same conclusion is drawn from the information presented on Table Q11.1 (i.e., the only configuration that significantly impacts core damage frequency is that with a logic train inoperable).

Based on the information provided in RAI response Tables Q11.1 and Q18.1, it is concluded that the only plant configuration with an appreciable impact on CDF or a significant impact on the relative importance of other systems is the configuration with one logic train inoperable. Therefore, the Tier 2 limitations are appropriate only when a logic cabinet is out of service. There are no Tier 2 limitations when a slave relay, master relay, or analog channel is out of service.

Consistent with the WCAP-14333 Safety Evaluation (SE) requirement to include Tier 2 insights into the decision-making process before taking equipment out of service, restrictions on concurrent removal of certain equipment when a logic train is inoperable for maintenance will be included. Note that these restrictions do not apply when a logic train is being tested under the 4-hour bypass Note of TS 3.3.1 Condition Q, TS 3.3.2 Condition C, or TS 3.3.2 Condition G. Entry into these Conditions is not a typical, preplanned evolution during power operation, other than for surveillance testing. Since these Conditions are typically entered due to equipment failure, it follows that some of the following Tier 2 restrictions may not be met at the time of Condition entry. If this situation were to occur during the extended 24-hour CT, the Tier 3 Configuration Risk Management Program discussed below will assess the emergent condition and direct activities to restore the inoperable logic train and exit the Condition or fully implement the Tier 2 restrictions, as appropriate from a risk management perspective. The following restrictions will be put in place (see also Enclosure 5):

- To preserve ATWS mitigation capability, activities that degrade the availability of the AFW system, reactor coolant system (RCS) pressure relief system (pressurizer power operated relief valves (PORVs) and safety valves), AMSAC, or turbine trip should not be scheduled when a logic train is inoperable for maintenance.

- To preserve loss of coolant accident mitigation capability, one complete emergency core cooling system train that can be actuated automatically must be maintained when a logic train is inoperable for maintenance.

- To preserve reactor trip and safeguards actuation capability, activities that cause master relays or slave relays in the available train to be unavailable and activities that cause analog channels to be unavailable should not be scheduled when a logic train is inoperable for maintenance.

- Activities on electrical systems (e.g., AC and DC power) and cooling systems (e.g., essential service water and component cooling water) that support the systems or functions listed in the first three bullets should not be scheduled when a logic train is inoperable for maintenance. That is, one complete train of a function that supports a complete train of a function noted above must be available.

Note that the containment cooling system was shown to have a relatively significant increase in importance ranking in Table Q18.I when a logic train is inoperable. However, in the [DCPP] PRA, containment cooling has negligible impact on core damage or large early release frequencies. Therefore, consistent with Enclosure 6 of the October 13, 1999, Vogtle amendment request, as included in Reference 10, increasing the availability of the containment cooling system will not offset or counter the inoperable logic train and no Tier 2 limitations are appropriate for this system.

WCAP-15376

Recommended Tier 2 restrictions for WCAP-15376 are provided in Section 8.5 of that topical report when a RTB train is inoperable for maintenance. Note that these restrictions do not apply when a RTB train is being tested under the 4-hour bypass note for TS 3.3.1 Condition R. Entry into this Condition is not a typical, pre-planned evolution during power operation, other than for surveillance testing. Since this Condition is typically entered due to equipment failure, it follows that some of the following Tier 2 restrictions may not be met at the time of Condition entry. If this situation were to occur during the extended 24-hour CT, the Tier 3 Configuration Risk Management Program discussed below will assess the emergent condition and direct activities to restore the inoperable RTB train and exit the Condition or fully implement the Tier 2 restrictions as appropriate from a risk management perspective. The following restrictions will be put in place (see also Enclosure 5):

- The probability of failing to trip the reactor on demand will increase when a RTB train is removed from service; therefore, systems designed for mitigating an ATWS event should be maintained available. RCS pressure relief (pressurizer PORVs and safety valves), AFW flow (for RCS heat removal), AMSAC, and turbine trip are important to alternate ATWS mitigation. Therefore, activities that degrade the availability of the AFW system, RCS pressure relief system (pressurizer PORVs and safety valves), AMSAC, or turbine trip should not be scheduled when a RTB train is inoperable for maintenance.

- Due to the increased dependence on the available reactor trip train when one logic train or one RTB train is inoperable for maintenance, activities that degrade other components of the RTS, including master relays or slave relays, and activities that cause analog channels to be unavailable, should not be scheduled when a RTB train is inoperable for maintenance.

- Activities on electrical systems (e.g., AC and DC power) and cooling systems (e.g., essential service water) that support the systems or functions listed in the first two bullets should not be scheduled when a RTB train is inoperable for maintenance. That is, one complete train of a function that supports a complete train of a function noted above must be available.

Tier 3, Risk-Informed Configuration Risk Management

Tier 3 requires a proceduralized process to assess the risk associated with both planned and unplanned work activities. The objective of the third tier is to ensure that the risk impact of out-of-service (OOS) equipment is evaluated prior to performing any maintenance activity. As stated in Section 2.3 of RG 1.177, "a viable program would be one that is able to uncover risk-significant plant equipment outage configurations in a timely manner during normal plant operation." The third-tier requirement is an extension of the second-tier requirement, but addresses the limitation of not being able to identify all possible risk-significant plant configurations in the second-tier evaluation. Programs and procedures are in place at [DCPP] which serve to address this objective.

[DCPP has developed a process for online risk assessment and management using AD7.DC6, "On-Line Maintenance Risk Management." This procedure allows for appropriate evaluation of the risk impact of equipment out of service while the plant is on-line prior to performing any maintenance activity or following an equipment failure or other internal or external event that impacts risk. This program provides guidance for managing plant trip risk and performing probabilistic, and safety function risk assessment as required by 10 CFR 50.65(a)(4) of the Maintenance Rule. The procedure addresses risk management practices in the maintenance planning phase and maintenance execution phase (real time) for Modes 1 through 4. Appropriate consideration is given to equipment unavailability, operational activities such as testing, and weather conditions.

In general, risk from performing maintenance on-line is minimized by:

- Performing only those preventative and corrective maintenance items on-line required to maintain the reliability of structures, systems or components (SSC).

- Minimizing cumulative unavailability of safety-related and risk significant SSCs by limiting the number of at-power maintenance outage windows per cycle per train/component.

- Minimizing the total number of SSCs OOS at the same time.

- Minimizing the risk of initiating plant transients (trips) that could challenge safety systems by implementing compensatory measures.

- Avoiding higher risk combinations of OOS SSCs using PRA insights.

- Maintaining defense-in-depth by avoiding combinations of OOS SSCs that are related to similar safety functions or that affect multiple safety functions.

- Scheduling in train/bus windows to avoid removing equipment from different trains simultaneously.

In general, risk is managed by:

- Evaluating plant trip risk activities or conditions and mitigating them by taking appropriate compensatory measures and/or ensuring defense-in-depth of safety systems that are challenged by a plant trip.

- Evaluating and controlling risk based on probabilistic and key safety function defense-in-depth evaluations.

- Implementing compensatory measures and requirements for management authorization or notification for certain "high-risk" configurations.

Actions are taken and appropriate attention is given to configurations and situations commensurate with the level of risk as evaluated using AD7.DC6. This occurs both during the planning and real time (execution) phases.

For planned maintenance activities, an assessment of the overall risk of the activity on plant safety is performed and documented per AD7.DC6 prior to scheduled work. Consideration is given to plant and external conditions, the number of activities being performed concurrently, the potential for plant trips, and the availability and "health" of redundant trains.

Risk is evaluated, managed and documented for all activities or conditions based on the current plant state:

- Before any planned or emergent maintenance is to be performed.

- As soon as possible when an emergent plant condition is discovered.

- As soon as possible when an external or internal event or condition is recognized.]

SE Conditions

NRC approval of WCAP-14333 was subject to the following conditions requiring plant-specific information:

1. Confirm the applicability of the WCAP-14333 analyses for the plant.

2. Address the Tier 2 and Tier 3 analyses including the Configuration Risk Management Program insights and confirm that these insights are incorporated into the decision making process before taking equipment out of service.

NRC approval of WCAP-15376 was subject to the following conditions requiring plant-specific information:

1. Confirm the applicability of the topical report to the plant and perform a plant-specific assessment of containment failures and address any design or performance differences that may affect the proposed changes.

2. Address the Tier 2 and Tier 3 analyses including risk significant configuration insights and confirm that these insights are incorporated into the plant-specific configuration risk management program.

3. The risk impact of concurrent testing of one logic cabinet and associated reactor trip breaker needs to be evaluated on a plant-specific basis to ensure conformance with the WCAP-15376-P, Rev. 0 evaluation, and RGs 1.174 and 1.177.

4. To ensure consistency with the reference plant, the model assumptions for human reliability in WCAP-15376-P, Rev. 0 should be confirmed to be applicable to the plant-specific configuration.

5. For future digital upgrades with increased scope, integration and architectural differences beyond that of Eagle 21, the staff finds the generic applicability of WCAP-15376-P, Rev. 0 to future digital systems not clear and should be considered on a plant-specific basis.

6. An additional commitment from the response to NRC RAI Question 18 (Reference 12) requires that each plant will review their setpoint calculation

methodology to ascertain the impact of extending the COT Surveillance Frequency from 92 days to 184 days.

WCAP-14333 and WCAP-15376 SE Condition 1, Topical Report Applicability Determination

In order to address SE Condition 1 for both WCAPs, Westinghouse issued implementation guidelines for licensees to confirm the analyses are applicable to their plant. See Enclosure 6.

WCAP-14333 and WCAP-15376 SE Condition 2

SE Condition 2 for both topical reports is addressed above under the Tier 2 and Tier 3 discussions.

WCAP-15376 SE Condition 3

The response to NRC RAI Question 4 in Reference 11 provided the ICCDP for this configuration (both the logic train and associated RTB train out of service) for preventive maintenance for a total time of 30 hours, which is comprised of a CT of 24 hours plus 6 hours to reach Mode 3. The ICCDP for 30 hours of unavailability for this configuration is 3.2E-07, which meets the RG 1.177 acceptance criteria of less than 5E-07. Since this ICCDP value is based on the logic train and reactor trip breaker being out of service for 30 hours at the same time, bypassing one logic train and associated RTB train for 4 hours for testing will also meet the RG 1.177 ICCDP guideline.

SE Condition 3 is addressed by demonstrating that the WCAP-15376 analysis is applicable. Demonstrating the applicability of the WCAP-15376 analysis is discussed in detail in the above response to SE Condition 1 (see Enclosure 6).

WCAP-15376 SE Condition 4

See Enclosure 6.

WCAP-15376 SE Condition 5

This condition does not apply to [DCPP] at this time. Future digital upgrades will require separate evaluation.

WCAP-15376 RAI Question 18 Commitment

The response to this RAI in Reference 12 noted that plant-specific RTS and ESFAS setpoint uncertainty calculations and assumptions, including instrument drift, will be

reviewed to determine the impact of extending the Surveillance Frequency of the COT from 92 days to 184 days.

The rack drift term used in the [DCPP AV setpoint analysis is the generic 1 percent span value found in WCAP-11082 Revision 5. Subsequent to the issue of this WCAP, DCPP performed a detailed statistical-based drift study of all NIS bistables. This study utilized a large population of As Left – As Found (AF) data collected from COTs and channel calibrations over a wide variety of surveillance intervals. The results of this study concluded that there is no statistically significant correlation between the magnitude of drift and the length of surveillance interval. A review of maintenance history also confirms that except for extremely rare occasions, AF data has not exceeded acceptable limits. DCPP therefore concludes that increasing the NIS COT period from 92 days to 184 days will have no impact on any NIS setpoint calculation or assumption.

As part of the DCPP 24-Month Fuel Cycle program, Westinghouse evaluated the continued performance of the Eagle 21 process racks, providing assurance that the Eagle 21 process racks were performing as designed and capable of maintaining calibration tolerances as assumed in the setpoint study. Westinghouse reviewed the proposed surveillance extensions and determined that the change would not impact the results of the analysis. Specifically, the Eagle 21 cards are not expected to drift when in a design-functional condition, and therefore would not be impacted by an extended surveillance frequency. A design-functional condition for the Eagle 21 cards is defined as the ability to carry out the self-check and self-calibration functions. Thus an operable Eagle 21 card is one that is found within the basic calibration accuracy defined for that type of card. An inoperable card is one that is unable to carry out the self-calibration function within the defined calibration accuracy, which is a condition that is annunciated by the Eagle 21 protection system. As a result of the review of the DCPP Eagle 21 process racks, it is Westinghouse and PG&E's expectation that the magnitude of drift experienced by those process rack cards would be minimal over a 184-day surveillance interval. A more definitive indication is the number of card failures in a fuel cycle. A review of Eagle 21 card failures at DCPP over the last 5 years shows that the number of card failures is minimal and within industry averages. And therefore it can be stated that the DCPP Eagle 21 process rack cards are performing as designed and that a COT surveillance interval of 184 days is justified. Westinghouse and PG&E believe this conclusion is consistent with the calculation utilized as a basis for the uncertainty calculations documented in Section 4.3 of WCAP-11082 Revisions 3, 4, 5 and 6.

Therefore, a change to the COT Frequency will have no impact on the setpoint study results.]

Plant-Specific Evaluations for Functions not Evaluated Generically

[Insert 7 of TSTF-411 Revision 1 and Insert 14 of TSTF-418 Revision 2 note that in order to apply TS relaxations to plant-specific functions not evaluated generically, licensees must submit plant-specific evaluations for NRC review and approval. RTS Function 14.b and ESFAS Function 6.d.(2) , Steam Generator Water Level - Low Low Trip Time Delay (TTD) were not included in the generic analyses approved in WCAP-10271 (as supplemented), WCAP-14333, or WCAP-15376.

Several utilities completed plant-specific evaluations to demonstrate that the changes in WCAP-10271 and its supplements are applicable to functions not generically evaluated. The analyses performed in WCAP-14333 and WCAP-15376 covered representative RTS and ESFAS trip functions, a subset of the comprehensive set of trip functions included in WCAP-10271 and its supplements. Therefore, the changes approved in WCAP-14333 and WCAP-15376 are also applicable to those plant-specific functions with NRC-approved evaluations performed to apply the changes in WCAP-10271 and its supplements. As recognized in Section 11.0 of both WCAP-14333 and WCAP-15376, as well as in NRC-approved traveler TSTF-418 Revision 2, additional plant-specific evaluations should not be required.

DCPP performed an evaluation of Eagle 21 functions, which includes the TTD function, which was not analyzed generically. The NRC approved the plant-specific evaluation in DCPP LAs 84/83 dated October 7, 1993, (Reference 7). As such, additional evaluations should not be required. Pertinent excerpts from the original LAR (Reference 8) leading to the NRC issuance of DCPP LA 84/83 are reprinted below. This evaluation has already been reviewed and approved by the NRC for the WCAP-10271 changes and its applicability to the changes presented in WCAP-14333 and WCAP-15376 has been established as discussed above.

> PG&E recognizes that the WCAP-10271 evaluations were based on analog process protection systems. PG&E has determined that replacement of the Westinghouse 7100 analog process protection equipment with Eagle 21 digital process protection equipment, which is at least as reliable as the analog equipment, does not invalidate the conclusions drawn in WCAP-10271 and its supplements.
>
> From the results of the reliability/availability assessment of the Eagle 21 and equivalent process protection systems, it has been determined that the Eagle 21 digital system availability is equivalent to the analog system availability even when no credit is taken for the fail-safe design principles, redundancy, automatic surveillance testing, self-calibration, and self-diagnostic features of the Eagle 21 process protection system. If full credit were to be given to the capabilities that exist for the Eagle 21, such as the self-diagnostic features including the electrically programmable read-only

memory checksums, random access memory checks, math coprocessor checks, and loop cycle time checks, they would further improve system availability. Furthermore, if credit were to be given to the redundancy, automatic surveillance testing, and self-calibration capabilities, there would be an additional improvement in system availability. Items such as decreasing the impact on system accuracies because of drifting signal loops being corrected by the Eagle 21 self-calibration feature or decreasing system downtime because of the automatic surveillance/self-diagnostic features will also have a positive impact on system availability. The man-machine interface (MMI) provided with Eagle 21 will significantly reduce the amount of technician time required for maintenance and troubleshooting of the system. By using the MMI, instrument technician and engineering time needed to perform and review the quarterly functional tests will be significantly reduced over that required for the present equipment.

The results of the availability assessment of the Eagle 21 and the equivalent analog process protection system demonstrate that the Eagle 21 digital system is at least as reliable as the present analog technologies.

If a more detailed analysis were to be performed incorporating the automatic surveillance test, redundancy, and self-test, self-calibration, and self-diagnostics features of the Eagle 21 system, predicted system availability would be further improved.

With the incorporation of the self-test, self-calibration, self-diagnostic, and automatic surveillance testing features, operator interface with the system is minimized, resulting in decreased system downtime and improved system accuracy.

Actual system mean time between failures (MTBFs) for a digital system far exceeds the expected MTBFs derived from system design data.

Based on the above, the 72-hour CTs for Actions X.1 and X.2, with an additional 6 hours for Action X.3 (Mode 3), and 12-hour bypass test allowance from WCAP-14333 are applied to TS 3.3.1 Condition X. Likewise, the 72-hour CTs for Actions M.1 and M.2, with an additional 6 hours for Action M.3.1 (Mode 3) and 12 additional hours for Action M.3.2 (Mode 4), and 12-hour bypass test allowance from WCAP-14333 are applied to TS 3.3.2 Condition M.]

Deviations from approved TSTF-411 Revision 1 and TSTF-418 Revision 2

[The changes in TSTF-418 Revision 2 regarding the TS 3.3.1 Condition for RTBs are superseded by the changes in TSTF-411 Revision 1. Option 3 of Insert 6 in TSTF-411 Revision 1 is followed.

TS 3.3.1 Condition D is restructured to avoid confusion as to when a flux map for quadrant power tilt ratio (QPTR) is required. The version of Condition D approved in TSTF-418, Revision 2, could incorrectly lead an operator to believe that he could pursue just the option of Required Actions D.1.1 and D.1.2, potentially overlooking the requirement to do a flux map for QPTR within 12 hours per the Note above SR 3.2.4.2. In addition, Required Actions with shorter CTs (12 hours) are supposed to appear before Required Actions with longer CTs (72 hours) in the D.2.1 and D.2.2 option. The revised Condition D captures the approved changes (bypass time of 12 hours, maintenance time before tripping of 72 hours), while eliminating the QPTR and formatting confusions.

The changes to TS 3.3.1 Condition X and TS 3.3.2 Condition M are based on the plant-specific evaluation discussed above.

No changes are made regarding the RCP Breaker Position RTS trip function {RTS Function 11} and Residual Heat Removal Pump Trip on Refueling Water Storage Tank Level-low {ESFAS Function 7} since no plant-specific evaluation has been performed and these functions are not covered by the WCAPs. A new TS 3.3.1 condition N is created to retain the requirements from TS 3.3.1 condition M for RCP Breaker Position RTS trip function.

TSTF-418, Revision 2, Inserts 1, 2, and 3 were not included in the DCPP TS markups for the following conditions:

- TS 3.3.1 Condition D – Function 2.a has no bypass capability.

- TS 3.3.1 Condition E – The wording is effectively already included for Functions 7 and 8.b. Functions 2.b, 3.a, and 3.b have no bypass capability. Function 14.a is a 2/3 coincidence for trip and bypassing the inoperable channel and another channel would remove the protection capabilities of this function.

- TS 3.3.1 Condition M – The wording is effectively already included for 8.a. Function 9 and 10 are a 2/3 coincidence for trip and bypassing the inoperable channel and another channel would remove the protection capabilities of this function. Functions 12 and 13 have no bypass capability. As stated above, Function 11 is moved to new condition N. Function 11 is a 1/1 coincidence reactor trip above P-7.

- TS 3.3.1 Condition O – Function 16.a has no bypass capability.

- TS 3.3.1 Condition R – As stated above, condition for RTBs are superseded by the changes in TSTF-411 Revision 1. TSTF-411 Revision 1 does not include Insert 3.

- TS 3.3.2 Condition D – The wording is effectively already included for Function 1.d. Functions 1.e, 4.d(1), 4.d(2), and 6.d(1) are a 2/3 coincidence for trip and bypassing the inoperable channel and another channel would remove the protection capabilities of this function.

- TS 3.3.2 Condition I – Function 6.g has no bypass capability.

- TS 3.3.2 Condition J – Function 5.b, is a 2/3 coincidence for trip and bypassing the inoperable channel and another channel would remove the protection capabilities of this function.

- TS 3.3.2 Condition O – Function 1.c is a 2/3 coincidence for trip and bypassing the inoperable channel and another channel would remove the protection capabilities of this function.

TS 3.3.2 Conditions O and P have a CT of 108 hours to be in Mode 5, rather than 84 hours to be in Mode 4 as shown in TSTF-418, Revision 2 (TS 3.3.2 Conditions D and E).

The TSTF-418, Revision 2 changes to Loss of Power Diesel Generator Start Instrumentation (TS 3.3.5) are not made since no plant-specific evaluation has been performed and this function is not covered by the WCAP as stated in Insert 19 in TSTF-418, Revision 2.

The TSTF-411, Revision 1 changes to actuation logic and master relays associated with the Control Room Ventilation System Actuation Instrumentation (TS 3.3.7) are not processed through the SSPS. Therefore, the TSTF-411 Revision 1 changes to STS 3.3.7 do not apply to DCPP's TS.]

5.0 Regulatory Analysis

This section addresses the standards of 10 CFR 50.92 as well as the applicable regulatory requirements and acceptance criteria.

5.1 No Significant Hazards Consideration (NSHC)

The proposed amendment would revise Technical Specification (TS) 3.3.1, Reactor Trip System (RTS) Instrumentation, TS 3.3.2, Engineered Safety Feature Actuation System (ESFAS) Instrumentation, and TS 3.3.6, Containment Ventilation Isolation Instrumentation, to adopt the Completion Times (CTs), test bypass times, and Surveillance Frequency changes approved by NRC in WCAP-14333-P-A, Revision 1, October 1998 and WCAP-15376-P-A, Revision 1, March 2003. This amendment application is consistent with NRC-approved travelers TSTF-411 Revision 1, "Surveillance Test Interval Extensions for Components of the Reactor Protection System

(WCAP-15376-P)," and TSTF-418 Revision 2, "RPS and ESFAS Test Times and Completion Times (WCAP-14333)." The proposed changes do not involve a significant hazards consideration based on the three standards set forth in 10 CFR 50.92(c) as discussed below:

(1) Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

Overall protection system performance will remain within the bounds of the previously performed accident analyses since no hardware changes are proposed. The same RTS and ESFAS instrumentation will continue to be used. The protection systems will continue to function in a manner consistent with the plant design basis. These changes to the TS do not result in a condition where the design, material, and construction standards that were applicable prior to the change are altered.

The proposed changes will not modify any system interface. The proposed changes will not affect the probability of any event initiators. There will be no degradation in the performance of or an increase in the number of challenges imposed on safety-related equipment assumed to function during an accident situation. There will be no change to normal plant operating parameters or accident mitigation performance. The proposed changes will not alter any assumptions or change any mitigation actions in the radiological consequence evaluations in the Updated Final Safety Analysis Report.

The determination that the results of the proposed changes are acceptable was established in the NRC Safety Evaluations prepared for WCAP-14333-P-A, Revision 1, (issued by letter dated July 15, 1998) and for WCAP-15376-P-A, Revision 1, (issued by letter dated December 20, 2002). Implementation of the proposed changes will result in an insignificant risk impact. Applicability of these conclusions has been verified through plant-specific reviews and implementation of the generic analysis results in accordance with the respective NRC Safety Evaluation conditions.

The proposed changes to the CTs, test bypass times, and Surveillance Frequencies reduce the potential for inadvertent reactor trips and spurious engineered safeguard features actuations, and therefore do not increase the probability of any accident previously evaluated. The proposed changes do not change the response of the plant to any accidents and have an insignificant impact on the reliability of the RTS and ESFAS signals. The RTS and ESFAS will remain highly reliable and the proposed changes will not result in a significant increase in the risk of plant operation. This is

demonstrated by showing that the impact on plant safety as measured by the increase in core damage frequency (CDF) is less than 1.0E-06 per year and the increase in large early release frequency (LERF) is less than 1.0E-07 per year. In addition, for the CT changes, the incremental conditional core damage probabilities (ICCDP) and incremental conditional large early release probabilities (ICLERP) are less than 5.0E-07 and 5.0E-08, respectively. These changes meet the acceptance criteria in Regulatory Guides (RGs) 1.174 and 1.177. Therefore, since the RTS and ESFAS will continue to perform their functions with high reliability as originally assumed, and the increase in risk as measured by ΔCDF, ΔLERF, ICCDP, ICLERP risk metrics is within the acceptance criteria of existing regulatory guidance, there will not be a significant increase in the consequences of any accidents.

The proposed changes do not adversely affect accident initiators or precursors nor alter the design assumptions, conditions, or configuration of the facility or the manner in which the plant is operated and maintained. The proposed changes do not alter or prevent the ability of structures, systems, and components from performing their intended function to mitigate the consequences of an initiating event within the assumed acceptance limits. The proposed changes do not affect the source term, containment isolation, or radiological release assumptions used in evaluating the radiological consequences of any accident previously evaluated. The proposed changes are consistent with safety analysis assumptions and resultant consequences.

Therefore, this change does not increase the probability or consequences of any accident previously evaluated.

(2) Do the proposed changes create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

There are no hardware changes nor are there any changes in the method by which any safety-related plant system performs its safety function. The proposed changes will not affect the normal method of plant operation. No performance requirements will be affected or eliminated. The proposed changes will not result in physical alteration to any plant system nor will there be any change in the method by which any safety-related plant system performs its safety function. There will be no setpoint changes or changes to accident analysis assumptions.

No new accident scenarios, transient precursors, failure mechanisms, or limiting single failures are introduced as a result of these changes. There

will be no adverse effect or challenges imposed on any safety-related system as a result of these changes.

Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any previously evaluated.

(3) Do the proposed changes involve a significant reduction in a margin of safety?

Response: No

The proposed changes do not affect the acceptance criteria for any analyzed event nor is there a change to any Safety Analysis Limit. There will be no effect on the manner in which safety limits, limiting safety system settings, or limiting conditions for operation are determined nor will there be any effect on those plant systems necessary to assure the accomplishment of protection functions. There will be no impact on the overpower limit, departure from nucleate boiling limits, local power peaking factor (F_Q), hot channel factor ($F\Delta H$), loss-of-coolant accident (LOCA) peak cladding temperature, peak local power density, or any other margin of safety. The radiological dose consequence acceptance criteria listed in the Standard Review Plan will continue to be met.

Redundant RTS and ESFAS trains are maintained, and diversity with regard of the signals that provide reactor trip and engineered safety features actuation is also maintained. All signals credited as primary or secondary, and all operator actions credited in the accident analyses will remain the same. The proposed changes will not result in plant operation in a configuration outside the design basis. The calculated impact on risk is insignificant and meets the acceptance criteria contained in RGs 1.174 and 1.177. Although there was no attempt to quantify any positive human factors benefit due to increased CTs and bypass test times, it is expected that there would be a net benefit due to a reduced potential for spurious reactor trips and actuations associated with testing.

Implementation of the proposed changes is expected to result in an overall improvement in safety, as follows:

a) Reduced testing will result in fewer inadvertent reactor trips, less frequent actuation of ESFAS components, less frequent distraction of operations personnel without significantly affecting RTS and ESFAS reliability.

b) Improvements in the effectiveness of the operating staff in monitoring and controlling plant operation will be realized. This is due to less

frequent distraction of the operators and shift supervisor to attend to instrumentation Required Actions with short CTs.

c) Longer repair times associated with increased CTs will lead to higher quality repairs and improved reliability.

d) The CT extensions for the reactor trip breakers will provide additional time to complete test and maintenance activities while at power, potentially reducing the number of forced outages related to compliance with reactor trip breaker CT, and provide consistency with the CT for the logic trains.

Therefore, the proposed changes do not involve a significant reduction in the margin of safety.

Conclusion

Based on the above, it is concluded that the proposed amendment involves no significant hazards consideration under the standards set forth in 10 CFR 50.92(c) and, accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

The regulatory bases and guidance documents associated with the systems discussed in this amendment application include:

General design criteria (GDC) 2 requires that structures, systems, and components important to safety be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without the loss of the capability to perform their safety functions.

GDC 4 requires that structures, systems, and components important to safety be designed to accommodate the effects of, and to be compatible with, the environmental conditions associated with the normal operation, maintenance, testing, and postulated accidents, including LOCAs. These SSCs shall be appropriately protected against dynamic effects, including the effects of missiles, pipe whipping, discharging fluids that may result from equipment failures, and from events and conditions outside the nuclear power unit. However, dynamic effects associated with postulated pipe ruptures in nuclear power units may be excluded from the design basis when analyses reviewed and approved by the Commission demonstrate that the probability of fluid system piping rupture is extremely low under conditions consistent with the design basis for the piping.

GDC 13 requires that instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems.

GDC 20 requires that the protection system(s) shall be designed (1) to initiate automatically the operation of appropriate systems including the reactivity control systems, to assure that specified acceptable fuel design limits are not exceeded as a result of anticipated operational occurrences and (2) to sense accident conditions and to initiate the operation of systems and components important to safety.

GDC 21 requires that the protection system(s) shall be designed for high functional reliability and testability.

GDC 22 through GDC 25 and GDC 29 require various design attributes for the protection system(s), including independence, safe failure modes, separation from control systems, requirements for reactivity control malfunctions, and protection against anticipated operational occurrences.

RG 1.22 discusses an acceptable method of satisfying GDC 20 and GDC 21 regarding the periodic testing of protection system actuation functions. These periodic tests should duplicate, as closely as practicable, the performance that is required of the actuation devices in the event of an accident.

10 CFR 50.55a(h) requires that the protection systems meet IEEE 279-1971. Section 4.2 of IEEE 279-1971 discusses the general functional requirement for protection systems to assure they satisfy the single failure criterion.

There will be no changes to the RTS or ESFAS instrumentation design such that compliance with any of the regulatory requirements and guidance documents above would come into question. The above evaluations confirm that the plant will continue to comply with all applicable regulatory requirements.

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

6.0 Environmental Consideration

[PG&E] has determined that the proposed amendment would change requirements with respect to the installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, [PG&E] has evaluated the proposed amendment and has determined that the amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amount of effluent that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22 (c)(9). Therefore, pursuant to 10 CFR 51.22 (b), an environmental assessment of the proposed amendment is not required.

7.0 References

1. WCAP-14333-P-A, Revision 1, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times," October 1998

2. WCAP-15376-P-A, Revision 1, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," March 2003

3. Industry/TSTF Standard Technical Specification Change Traveler TSTF-411, Revision 1, "Surveillance Test Interval Extensions for Components of the Reactor Protection System (WCAP-15376-P)"

4. Industry/TSTF Standard Technical Specification Change Traveler TSTF-418, Revision 2, "RPS and ESFAS Test Times and Completion Times (WCAP-14333)"

5. [Diablo Canyon License Amendment 36/35, dated April 25, 1989

6. Diablo Canyon License Amendment 61/60, dated May 23, 1991

7. Diablo Canyon License Amendment 84/83, dated October 7, 1993

8. Diablo Canyon License Amendment Request 92-05, "Eagle 21 Process Protection Upgrade and Resistance Temperature Detector Bypass Elimination," dated September 21, 1992]

9. Westinghouse Owners Group letter OG-96-110 dated December 20, 1996 (copy included in the back of the approved version of Reference 1 above)

10. Southern Nuclear Operating Company letter LCV-1364-A dated

June 1, 2000, Docket Numbers 50-424 and 50-425

11. Westinghouse Owners Group letter OG-02-002 dated January 8, 2002 (copy included in Appendix D of the approved version of Reference 2 above)

12. Westinghouse Owners Group letter OG-01-058 dated September 28, 2001 (copy included in Appendix D of the approved version of Reference 2 above)

13. [Diablo Canyon License Amendment 135/135, dated May 28, 1999]

14. WCAP-10271-P-A Supplement 2, Revision 1, "Evaluation of Surveillance Frequencies and Out of Service Times for the Engineered Safety Features Actuation System," June 1990

15. WCAP-10271-P-A and Supplement 1-P-A, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System," May 1986

MARKUP OF TECHNICAL SPECIFICATIONS

Proposed Technical Specification Changes

Remove	Insert
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Page 3.3-3	Page 3.3-3
Page 3.3-3a	
Page 3.3-4	Page 3.3-4
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Page 3.3-25	Page 3.3-25
Page 3.3-45	Page 3.3-45

INSERT 1

2. One channel may be bypassed for up to 12 hours for surveillance testing.

INSERT 2

N. One channel inoperable.	N.1	Place channel in trip.	6 hours
	OR		
	N.2	Reduce THERMAL POWER to < P-7.	12 hours

INSERT 3

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. One Power Range Neutron Flux - High channel inoperable.	---------- NOTE---------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment of other channels. ----------		
	D.1.1	---------- NOTE---------- Only required to be performed when the Power Range Neutron Flux input to QPTR is inoperable with THERMAL POWER > 75% RTP. ----------	
		Perform SR 3.2.4.2.	Once per 12 hours
		AND	
	D.1.2	Place channel in trip.	72 hours
	OR		
	D.2	Be in MODE 3.	78 hours

3.3 INSTRUMENTATION

No Changes

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 trains.	Immediately
B. One Manual Reactor Trip channel inoperable.	B.1 Restore channel to OPERABLE status. OR B.2 Be in MODE 3.	48 hours 54 hours
----------NOTE---------- While this LCO is not met for function 19, 20 or 21, in MODE 5, making the Rod Control System capable of rod withdrawal is not permitted. ----------		
C. One channel or train inoperable.	C.1 Restore channel or train to OPERABLE status. OR C.2.1 Initiate action to fully insert all rods.	48 hours 48 hours

(continued)

Move to page 3.3-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	AND 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. ---------- D.1.1 Place channel in trip. AND D.1.2 Reduce THERMAL POWER to ≤ 75% RTP. OR D.2.1 Place channel in trip. 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. OR D.3 Be in MODE 3.	6 hours 12 hours 6 hours Once per 12 hours 12 hours

(continued)

INSERT 3

Move to page 3.3-2

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One channel inoperable.	----------NOTE---------- The inoperable channel, or one additional channel for functions 6, 7, and 8.b may be bypassed for up to 12 hours for surveillance testing of other channels. For functions 2.b, 3.a, 3.b, and 14.a only the inoperable channel may be bypassed for surveillance testing of other channels. ----------	
	E.1 Place channel in trip. OR	72 hours
	E.2 Be in MODE 3.	78 hours
F. One Intermediate Range Neutron Flux channel inoperable.	F.1 Reduce THERMAL POWER to < P-6. OR	24 hours
	F.2 Increase THERMAL POWER to > P-10.	24 hours
G. Two Intermediate Range Neutron Flux channels inoperable.	G.1 ----------NOTE---------- Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed. ---------- Suspend operations involving positive reactivity additions. AND	Immediately
	G.2 Reduce THERMAL POWER to < P-6.	2 hours
H. Not used		

(continued)

Move to page 3.3-3

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. One Source Range Neutron Flux channel inoperable.	I.1 ----------NOTE---------- Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed. ---------- Suspend operations involving positive reactivity additions.	Immediately
J. Two Source Range Neutron Flux channels inoperable.	J.1 Open reactor trip breakers (RTBs).	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
K. One Source Range Neutron Flux channel inoperable.	K.1 Restore channel to OPERABLE status. OR	48 hours
	K.2.1 Initiate action to fully insert all rods. AND	48 hours
	K.2.2 Place the Control Rod System in a condition incapable of rod withdrawal.	49 hours
L. Required Source Range Neutron Flux channel inoperable.	L.1 ----------NOTE---------- Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM. ---------- Suspend operations involving positive reactivity additions. AND	Immediately
	L.2 Perform SR 3.1.1.1.	1 hour AND Once per 12 hours thereafter
M. One channel inoperable.	----------NOTE---------- The inoperable channel or one additional channel for function 8.a may be bypassed for up to 8 hours for surveillance testing of other channels. For functions 9, 10, 12, and 13, only the inoperable channel may be bypassed for surveillance testing of other channels. ---------- M.1 Place channel in trip. OR M.2 Reduce THERMAL POWER to < P-7.	12 hours 72 hours 78 hours
N. Not used		

INSERT 2

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
O. One Low Auto-Stop Oil Pressure Turbine Trip channel inoperable	----------NOTE---------- An inoperable channel may be bypassed for up to 2 hours for surveillance testing of other channels. ----------	
	O.1 Place channel in trip.	6 hours
	OR	
	O.2 Reduce THERMAL POWER TO < P-9	12 hours
P. One or more Turbine Stop Valve Closure, Turbine Trip channel(s) inoperable.	P.1 Place channel(s) in trip.	6 hours
	OR	
	P.2 Reduce THERMAL POWER to < P-9.	12 hours
Q. One train inoperable.	----------NOTE---------- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. ----------	
	Q.1 Restore train to OPERABLE status.	24 hours
	OR	
	Q.2 Be in MODE 3.	30 hours
R. One RTB train inoperable.	----------NOTES---------- 1. One train may be bypassed for up to 2 hours for surveillance testing provided the other train is OPERABLE.	4
	2. One RTB may be bypassed only for the time required for performing maintenance on undervoltage or shunt trip mechanisms per CONDITION U, provided the other train is OPERABLE. ----------	

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
R. (continued)	R.1	Restore train to OPERABLE status.	8 hours → 24
	OR		
	R.2	Be in MODE 3.	6 → 30 hours
S. One or more channels or trains inoperable.	S.1	Verify interlock is in required state for existing unit conditions.	1 hour
	OR		
	S.2	Be in MODE 3.	7 hours
T. One or more channels or trains inoperable.	T.1	Verify interlock is in required state for existing unit conditions.	1 hour
	OR		
	T.2	Be in MODE 2.	7 hours
U. One trip mechanism inoperable for one RTB.	U.1	Restore inoperable trip mechanism to OPERABLE status.	48 hours
	OR		
	U.2	Be in MODE 3.	54 hours
V. Not used			
W. One channel inoperable	----------NOTE---------- The inoperable channel may be bypassed for up to 72 hours for surveillance or maintenance. ----------		
	W.1	Place channel in trip	6 hours
	OR		
	W.2	Be in MODE 3	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
X. One or more SG Water Level Low - Low Trip Time Delay channel(s) inoperable.	----------NOTE---------- The inoperable channel or one additional channel may be bypassed for up to ~~4~~ 12 hours for surveillance testing of other channels. ----------	
	X.1 Set the Trip Time Delay to zero seconds.	~~8~~ 72 hours
	OR	
	X.2 Place the affected SG Water Level Low - Low channel(s) in trip.	~~8~~ 72 hours
	OR	
	X.3 Be in MODE 3.	~~12~~ 78 hours

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
SR 3.3.1.2	----------NOTE---------- Not required to be performed until 24 hours after THERMAL POWER is ≥ 15% RTP, but prior to exceeding 30% RTP. --- Compare results of calorimetric heat balance calculation to power range channel output. Adjust power range channel output if calorimetric heat balance calculation results exceed power range channel output by more than + 2% RTP.	24 hours
SR 3.3.1.3	----------NOTE---------- Not required to be performed until 24 hours after THERMAL POWER is ≥ 50% RTP. --- Compare results of the incore detector measurements to Nuclear Instrumentation System (NIS) AFD. Adjust NIS channel if absolute difference is ≥ 3%.	31 effective full power days (EFPD)
SR 3.3.1.4	----------NOTE---------- This Surveillance must be performed on the reactor trip bypass breaker, for the local manual shunt trip only, prior to placing the bypass breaker in service. --- Perform TADOT.	62 days on a STAGGERED TEST BASIS
SR 3.3.1.5	Perform ACTUATION LOGIC TEST.	92 days on a STAGGERED TEST BASIS

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.6	----------NOTE---------- Not required to be performed until 72 hours after THERMAL POWER ≥ 75% RTP. ---------- Calibrate excore channels to agree with incore detector measurements.	92 EFPD
SR 3.3.1.7	----------NOTE---------- 1. 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. 2. For source range instrumentation, this Surveillance shall include verification that interlocks P-6 and P-10 are in their required state for existing unit conditions. ---------- Perform COT.	~~92~~ 184 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.8	----------NOTE---------- This Surveillance shall include verification that interlocks P-6 and P-10 are in their required state for existing unit conditions. --- Perform COT.	-------NOTE------- Only required when not performed within previous ~~92~~ 184 days --- Prior to reactor startup AND 12 hours after reducing power below P-10 for power and intermediate instrumentation AND Four hours after reducing power below P-6 for source range instrumentation AND Every ~~92~~ 184 days thereafter
SR 3.3.1.9	----------NOTE---------- Verification of setpoint is not required. --- Perform TADOT.	 92 days
SR 3.3.1.10	----------NOTE---------- This Surveillance shall include verification that the time constants are adjusted to the prescribed values. --- Perform CHANNEL CALIBRATION.	 24 months

(continued)

No changes

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.11	----------NOTE---------- 1. Neutron detectors are excluded from CHANNEL CALIBRATION. 2. This Surveillance shall include verification that the time constants are adjusted to the prescribed values. 3. Power and Intermediate Range detector plateau voltage verification is not required to be performed until 72 hours after achieving equilibrium Conditions with Thermal Power ≥ 95% RTP. ---------- Perform CHANNEL CALIBRATION.	24 months
SR 3.3.1.12	Perform CHANNEL CALIBRATION.	24 months
SR 3.3.1.13	Perform COT.	24 months
SR 3.3.1.14	----------NOTE---------- Verification of setpoint is not required. ---------- Perform TADOT.	24 months
SR 3.3.1.15	----------NOTE---------- Verification of setpoint is not required. ---------- Perform TADOT	Prior to exceeding the P-9 interlock whenever the unit has been in MODE 3, if not performed in the previous 31 days.
SR 3.3.1.16	----------NOTE---------- Neutron detectors are excluded from response time testing. ---------- Verify RTS RESPONSE TIMES are within limits.	24 months on a STAGGERED TEST BASIS

No Changes

Table 3.3.1-1 (page 1 of 7)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[a] TRIP SETPOINT
1. Manual Reactor Trip	1,2	2	B	SR 3.3.1.14	NA	NA
	3[b], 4[b], 5[b]	2	C	SR 3.3.1.14	NA	NA
2. Power Range Neutron Flux						
a. High	1,2	4	D	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.7 SR 3.3.1.11 SR 3.3.1.16	≤ 110.2% RTP	109% RTP
b. Low	1[c],2	4	E	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11 SR 3.3.1.16	≤ 26.2% RTP	25% RTP
3. Power Range Neutron Flux Rate						
a. High Positive Rate	1,2	4	E	SR 3.3.1.7 SR 3.3.1.11	≤ 5.6% RTP with time constant ≥ 2 sec	5% RTP with time constant ≥ 2 sec
b. High Negative Rate	1,2	4	E	SR 3.3.1.7 SR 3.3.1.11 SR 3.3.1.16	≤ 5.6% RTP with time constant ≥ 2 sec	5% RTP with time constant ≥ 2 sec
4. Intermediate Range Neutron Flux	1[c], 2[d]	2	F,G	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11	≤ 30.6% RTP	25% RTP

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established 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.
(b) With Rod Control System capable of rod withdrawal or one or more rods not fully inserted.
(c) Below the P-10 (Power Range Neutron Flux) interlocks.
(d) Above the P-6 (Intermediate Range Neutron Flux) interlocks.

No Changes

Table 3.3.1-1 (page 2 of 7)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[a] TRIP SETPOINT
5. Source Range Neutron Flux	2[e]	2	I,J	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11 SR 3.3.1.16	≤ 1.4 E5 cps	1.0 E5 cps
	3[b], 4[b], 5[b]	2	J,K	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.11 SR 3.3.1.16	≤ 1.4 E5 cps	1.0 E5 cps
	3[f], 4[f], 5[f]	1	L	SR 3.3.1.1 SR 3.3.1.11	N/A	N/A
6. Overtemperature ΔT	1,2	4	E	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	Refer to Note 1 (Page 3.3-17)	Refer to Note 1 (Page 3.3-17)
7. Overpower ΔT	1,2	4	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	Refer to Note 2 (Page 3.3-18)	Refer to Note 2 (Page 3.3-18)
8. Pressurizer Pressure						
a. Low	1[g]	4	M	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 1947.5 psig	1950 psig
b. High	1,2	4	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≤ 2387.5 psig	2385 psig
9. Pressurizer Water Level—High	1[g]	3	M	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≤ 90.2%	90%

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established 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.
(b) With Rod Control System capable of rod withdrawal or one or more rods not fully inserted.
(e) Below the P-6 (Intermediate Range Neutron Flux) interlocks.
(f) With the RTBs open or all rods fully inserted and incapable of withdrawal. In this condition, source range Function does not provide reactor trip but does provide indication.
(g) Above the P-7 (Low Power Reactor Trips Block) interlock.

Table 3.3.1-1 (page 3 of 7)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[a] TRIP SETPOINT
10. Reactor Coolant Flow—Low	1[g]	3 per loop	M	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 89.8% of measured loop flow	90% of measured loop flow
11. Reactor Coolant Pump (RCP) Breaker Position	1[g]	1 per RCP	~~M~~ N	SR 3.3.1.14	NA	NA
12. Undervoltage RCPs	1[g]	2 per bus	M	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.16	≥ 7877 V each bus	8050 V each bus
13. Underfrequency RCPs	1[g]	3 per bus	M	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.16	≥ 53.9 Hz each bus	54.0 Hz each bus
14. a. Steam Generator (SG) Water Level—Low Low	1,2	3 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 7.0%	7.2%
b. SG Water Level - Low Low Trip Time Delay (TTD)	1,2	4	X	SR 3.3.1.7 SR 3.3.1.10	TTD ≤ 1.01 TD (Note 3) for RCS loop ΔT variable input ≤ 50.7% RTP and TTD=0 for RCS loop ΔT variable input > 50.7 % RTP	TTD ≤ TD (Note 3) for RCS loop ΔT variable input 50% RTP TTD=0 for RCS loop ΔT variable input 50% RTP
15. Not used						

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established 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.
(g) Above the P-7 (Low Power Reactor Trips Block) interlock.

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. OR B.2.1 Be in MODE 3. AND B.2.2 Be in MODE 5.	48 hours 54 hours 84 hours
C. One train inoperable.	----------NOTE---------- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. --- C.1 Restore train to OPERABLE status. OR C.2.1 Be in MODE 3. AND C.2.2 Be in MODE 5.	24 hours 30 hours 60 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One channel inoperable.	----------NOTE---------- The inoperable channel or one additional channel for Function 1.d may be bypassed for up to 4 hours for surveillance testing of other channels. For Functions 1.e, 4.d(1), 4.d(2) and 6.d(1), only the inoperable channel may be bypassed for surveillance testing of the other channels. ----------	
	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
E. One Containment Pressure channel inoperable.	----------NOTE---------- One additional channel may be bypassed for up to 4 hours for surveillance testing. ----------	
	E.1 Place channel in bypass.	6 hours
	OR	
	E.2.1 Be in MODE 3.	12 hours
	AND	
	E.2.2 Be in MODE 4.	18 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. One channel or train inoperable.	F.1 Restore channel or train to OPERABLE status. OR F.2.1 Be in MODE 3. AND F.2.2 Be in MODE 4.	48 hours 54 hours 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. ---------- G.1 Restore train to OPERABLE status. OR G.2.1 Be in MODE 3. AND G.2.2 Be in MODE 4.	24 hours 30 hours 36 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. ---------- H.1 Restore train to OPERABLE status. OR H.2 Be in MODE 3.	24 hours 30 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. One channel inoperable.	----------NOTE---------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. ----------	
	I.1 Place channel in trip.	72 hours
	OR	
	I.2. Be in MODE 2.	78 hours
J. One channel inoperable	----------NOTE---------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. ----------	
	J.1 Place channel in trip.	72 hours
	OR	
	J.2. Be in MODE 3.	78 hours
K. One channel inoperable	K.1.1 Place the channel in cut-out.	6 hours
	AND	
	K.1.2 Return the inoperable channel to an OPERABLE status	48 hours
	OR	
	K.2.1 Be in MODE 3.	54 hours
	AND	
	K.2.2 Be in MODE 5	84 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
L. One or more channels or trains inoperable.	L.1 Verify interlock is in required state for existing unit condition. OR L.2.1 Be in MODE 3. AND L.2.2 Be in MODE 4.	1 hour 7 hours 13 hours
M. One or more SG Water Level - Low Low Trip Time Delay channel(s) inoperable.	----------NOTE---------- The inoperable channel or one additional channel may be bypassed for up to ~~4~~ 12 hours for surveillance testing of other channels. ---------- M.1 Set the Trip Time Delay to zero seconds. OR M.2 Place the affected SG Water Level - Low Low channel(s) in trip. OR M.3.1 Be in MODE 3. AND M.3.2 Be in MODE 4.	 ~~6~~ 72 hours ~~6~~ 72 hours ~~12~~ 78 hours ~~12~~ 84 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
N. One channel inoperable.	N.1 Restore channel to OPERABLE status. OR N.2 Declare the associated AFW pump or MSIV inoperable.	48 hours Immediately
O. One channel inoperable	----------NOTE---------- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. ---------- O.1 Place channel in trip. OR O.2.1 Be in MODE 3 AND O.2.2 Be in MODE 5.	12 72 hours 78 hours 108 hours
P. One channel inoperable.	----------NOTE---------- One additional channel may be bypassed for up to 4 hours for surveillance testing. ---------- P.1 Place channel in bypass. OR P.2.1 Be in MODE 3 AND P.2.2 Be in MODE 5.	12 72 hours 78 hours 108 hours

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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
SR 3.3.2.2	Perform ACTUATION LOGIC TEST.	~~31~~ 92 days on a STAGGERED TEST BASIS
SR 3.3.2.3	Not used.	
SR 3.3.2.4	Perform MASTER RELAY TEST.	~~31~~ 92 days on a STAGGERED TEST BASIS
SR 3.3.2.5	Perform COT.	~~92~~ 184 days
SR 3.3.2.6	Perform SLAVE RELAY TEST.	24 months
SR 3.3.2.7	Not used.	
SR 3.3.2.8	----------NOTE---------- Verification of setpoint not required for manual initiation functions. --- Perform TADOT.	24 months
SR 3.3.2.9	----------NOTE---------- This Surveillance shall include verification that the time constants are adjusted to the prescribed values. --- Perform CHANNEL CALIBRATION.	24 months
SR 3.3.2.10	----------NOTE---------- Not required to be performed for the turbine driven AFW pump until 24 hours after SG pressure is ≥ 650 psig. --- Verify ESF RESPONSE TIMES are within limits.	24 months on a STAGGERED TEST BASIS

(continued)

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3.3 INSTRUMENTATION

No Changes

3.3.6 Containment Ventilation Isolation Instrumentation

LCO 3.3.6 The Containment Ventilation Isolation instrumentation for each Function in Table 3.3.6-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.6-1

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ----------NOTE---------- Only applicable in MODE 1, 2, 3, or 4. ---------- 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. ---------- One or more automatic actuation trains inoperable. OR Both radiation monitoring channels inoperable. OR 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 isolation valves made inoperable by isolation instrumentation.	Immediately

(continued)

ACTIONS (continued) No Changes

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. ---------NOTE---------- Only applicable during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment. ---------- Required automatic actuation train inoperable. OR Required radiation monitoring channel inoperable.	C.1 Place and maintain containment ventilation valves in closed position. OR C.2 Enter applicable Conditions and Required Actions of LCO 3.9.4, "Containment Penetrations," for containment ventilation isolation valves made inoperable by isolation instrumentation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

----------NOTE----------
Refer to Table 3.3.6-1 to determine which SRs apply for each Containment Ventilation Isolation Function.

	SURVEILLANCE	FREQUENCY
SR 3.3.6.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.6.2	Perform ACTUATION LOGIC TEST.	~~31~~ 92 days on a STAGGERED TEST BASIS
SR 3.3.6.3	Perform MASTER RELAY TEST.	~~81~~ 92 days on a STAGGERED TEST BASIS
SR 3.3.6.4	Perform CFT.	92 days
SR 3.3.6.5	Perform SLAVE RELAY TEST.	24 months
SR 3.3.6.6	Not used	
SR 3.3.6.7	Perform CHANNEL CALIBRATION.	24 months
SR 3.3.6.8	Verify ESF Containment Ventilation Isolation RESPONSE TIME is within limits.	24 months on a STAGGERED TEST BASIS

NOTE
This Surveillance is only applicable to the master relays of the ESFAS Instrumentation.

NOTE
This Surveillance is only applicable to the actuation logic of the ESFAS Instrumentation.

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RETYPED TECHNICAL SPECIFICATIONS

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 trains.	Immediately
B. One Manual Reactor Trip channel inoperable.	B.1	Restore channel to OPERABLE status.	48 hours
	OR		
	B.2	Be in MODE 3.	54 hours
----------NOTE---------- While this LCO is not met for function 19, 20 or 21, in MODE 5, making the Rod Control System capable of rod withdrawal is not permitted. ----------			
C. One channel or train inoperable.	C.1	Restore channel or train to OPERABLE status.	48 hours
	OR		
	C.2.1	Initiate action to fully insert all rods.	48 hours
		AND	
	C.2.2	Place the Rod Control System in a condition incapable of rod withdrawal.	49 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One Power Range Neutron Flux-High channel inoperable.	----------NOTE---------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment of other channels. ----------	
	D.1.1 ----------NOTE---------- Only required to be performed when the Power Range Neutron Flux input to QPTR is inoperable with THERMAL POWER >75% RTP. ---------- Perform SR 3.2.4.2.	Once per 12 hours
	AND	
	D.1.2 Place channel in trip.	72 hours
	OR	
	D.2 Be in MODE 3.	78 hours
E. One channel inoperable.	----------NOTE---------- The inoperable channel, or one additional channel for functions 6, 7, and 8.b may be bypassed for up to 12 hours for surveillance testing of other channels. For functions 2.b, 3.a, 3.b, and 14.a only the inoperable channel may be bypassed for surveillance testing of other channels. ----------	
	E.1 Place channel in trip.	72 hours
	OR	
	E.2 Be in MODE 3.	78 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
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.	G.1	----------NOTE---------- Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed. ----------	
		Suspend operations involving positive reactivity additions.	Immediately
	AND		
	G.2	Reduce THERMAL POWER to < P-6.	2 hours
H. Not used			
I. One Source Range Neutron Flux channel inoperable.	I.1	----------NOTE---------- Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed. ----------	
		Suspend operations involving positive reactivity additions.	Immediately
J. Two Source Range Neutron Flux channels inoperable.	J.1	Open reactor trip breakers (RTBs).	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
K. One Source Range Neutron Flux channel inoperable.	K.1	Restore channel to OPERABLE status.	48 hours
	OR		
	K.2.1	Initiate action to fully insert all rods.	48 hours
		AND	
	K.2.2	Place the Control Rod System in a condition incapable of rod withdrawal.	49 hours
L. Required Source Range Neutron Flux channel inoperable.	L.1	----------NOTE---------- Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM. ---------- Suspend operations involving positive reactivity additions.	Immediately
	AND		
	L.2	Perform SR 3.1.1.1.	1 hour AND Once per 12 hours thereafter
M. One channel inoperable.	----------NOTE---------- The inoperable channel or one additional channel for function 8.a may be bypassed for up to 12 hours for surveillance testing of other channels. For functions 9, 10, 12, and 13, only the inoperable channel may be bypassed for surveillance testing of other channels. ----------		
	M.1	Place channel in trip.	72 hours
	OR		
	M.2	Reduce THERMAL POWER to < P-7.	78 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
N. One channel inoperable.	N.1 Place channel in trip. OR N.2 Reduce THERMAL POWER to < P-7.	6 hours 12 hours
O. One Low Auto-Stop Oil Pressure Turbine Trip channel inoperable	----------NOTE---------- An inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. ---------- O.1 Place channel in trip. OR O.2 Reduce THERMAL POWER TO < P-9	 72 hours 76 hours
P. One or more Turbine Stop Valve Closure, Turbine Trip channel(s) inoperable.	P.1 Place channel(s) in trip. OR P.2 Reduce THERMAL POWER to < P-9.	72 hours 76 hours
Q. One train inoperable.	----------NOTE---------- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. ---------- Q.1 Restore train to OPERABLE status. OR Q.2 Be in MODE 3.	 24 hours 30 hours
R. One RTB train inoperable.	----------NOTE---------- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. ----------	 (continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
R. (continued)	R.1	Restore train to OPERABLE status.	24 hours
	OR		
	R.2	Be in MODE 3.	30 hours
S. One or more channels or trains inoperable.	S.1	Verify interlock is in required state for existing unit conditions.	1 hour
	OR		
	S.2	Be in MODE 3.	7 hours
T. One or more channels or trains inoperable.	T.1	Verify interlock is in required state for existing unit conditions.	1 hour
	OR		
	T.2	Be in MODE 2.	7 hours
U. One trip mechanism inoperable for one RTB.	U.1	Restore inoperable trip mechanism to OPERABLE status.	48 hours
	OR		
	U.2	Be in MODE 3.	54 hours
V. Not used			
W. One channel inoperable	----------NOTE---------- The inoperable channel may be bypassed for up to 72 hours for surveillance or maintenance. ----------		
	W.1	Place channel in trip	6 hours
	OR		
	W.2	Be in MODE 3	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
X. One or more SG Water Level Low - Low Trip Time Delay channel(s) inoperable.	----------NOTE---------- The inoperable channel or one additional channel may be bypassed for up to 12 hours for surveillance testing of other channels. ----------	
	X.1 Set the Trip Time Delay to zero seconds. OR	72 hours
	X.2 Place the affected SG Water Level Low - Low channel(s) in trip. OR	72 hours
	X.3 Be in MODE 3.	78 hours

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
SR 3.3.1.2	----------NOTE---------- Not required to be performed until 24 hours after THERMAL POWER is ≥ 15% RTP, but prior to exceeding 30% RTP. --- Compare results of calorimetric heat balance calculation to power range channel output. Adjust power range channel output if calorimetric heat balance calculation results exceed power range channel output by more than + 2% RTP.	24 hours
SR 3.3.1.3	----------NOTE---------- Not required to be performed until 24 hours after THERMAL POWER is ≥ 50% RTP. --- Compare results of the incore detector measurements to Nuclear Instrumentation System (NIS) AFD. Adjust NIS channel if absolute difference is ≥ 3%.	31 effective full power days (EFPD)
SR 3.3.1.4	----------NOTE---------- This Surveillance must be performed on the reactor trip bypass breaker, for the local manual shunt trip only, prior to placing the bypass breaker in service. --- Perform TADOT.	62 days on a STAGGERED TEST BASIS
SR 3.3.1.5	Perform ACTUATION LOGIC TEST.	92 days on a STAGGERED TEST BASIS

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.6	----------NOTE---------- Not required to be performed until 72 hours after THERMAL POWER ≥ 75% RTP. ---------- Calibrate excore channels to agree with incore detector measurements.	92 EFPD
SR 3.3.1.7	----------NOTE---------- 1. 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. 2. For source range instrumentation, this Surveillance shall include verification that interlocks P-6 and P-10 are in their required state for existing unit conditions. ---------- Perform COT.	184 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.8	----------NOTE---------- This Surveillance shall include verification that interlocks P-6 and P-10 are in their required state for existing unit conditions. ----------	--------NOTE-------- Only required when not performed within previous 184 days ----------
	Perform COT.	Prior to reactor startup AND 12 hours after reducing power below P-10 for power and intermediate instrumentation AND Four hours after reducing power below P-6 for source range instrumentation AND Every 184 days thereafter
SR 3.3.1.9	----------NOTE---------- Verification of setpoint is not required. ----------	
	Perform TADOT.	92 days
SR 3.3.1.10	----------NOTE---------- This Surveillance shall include verification that the time constants are adjusted to the prescribed values. ----------	
	Perform CHANNEL CALIBRATION.	24 months

(continued)

Table 3.3.1-1 (page 3 of 7)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[a] TRIP SETPOINT
10. Reactor Coolant Flow—Low	1[g]	3 per loop	M	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 89.8% of measured loop flow	90% of measured loop flow
11. Reactor Coolant Pump (RCP) Breaker Position	1[g]	1 per RCP	N	SR 3.3.1.14	NA	NA
12. Undervoltage RCPs	1[g]	2 per bus	M	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.16	≥ 7877 V each bus	8050 V each bus
13. Underfrequency RCPs	1[g]	3 per bus	M	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.16	≥ 53.9 Hz each bus	54.0 Hz each bus
14. a. Steam Generator (SG) Water Level—Low Low	1,2	3 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 7.0%	7.2%
b. SG Water Level - Low Low Trip Time Delay (TTD)	1,2	4	X	SR 3.3.1.7 SR 3.3.1.10	TTD ≤ 1.01 TD (Note 3) for RCS loop ΔT variable input ≤ 50.7% RTP and TTD=0 for RCS loop ΔT variable input > 50.7 % RTP	TTD ≤ TD (Note 3) for RCS loop ΔT variable input 50% RTP TTD=0 for RCS loop ΔT variable input 50% RTP
15. Not used						

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established 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.

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

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. OR B.2.1 Be in MODE 3. AND B.2.2 Be in MODE 5.	48 hours 54 hours 84 hours
C. One train inoperable.	----------NOTE---------- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. --- C.1 Restore train to OPERABLE status. OR C.2.1 Be in MODE 3. AND C.2.2 Be in MODE 5.	 24 hours 30 hours 60 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One channel inoperable.	----------NOTE---------- The inoperable channel or one additional channel for Function 1.d may be bypassed for up to 12 hours for surveillance testing of other channels. For Functions 1.e, 4.d(1), 4.d(2) and 6.d(1), only the inoperable channel may be bypassed for surveillance testing of the other channels. ----------	
	D.1 Place channel in trip.	72 hours
	OR	
	D.2.1 Be in MODE 3.	78 hours
	AND	
	D.2.2 Be in MODE 4.	84 hours
E. One Containment Pressure channel inoperable.	----------NOTE---------- 1. One additional channel may be bypassed for up to 12 hours for surveillance testing. 2. One channel may be bypassed for up to 12 hours for surveillance testing. ----------	
	E.1 Place channel in bypass.	72 hours
	OR	
	E.2.1 Be in MODE 3.	78 hours
	AND	
	E.2.2 Be in MODE 4.	84 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. One channel or train inoperable.	F.1 Restore channel or train to OPERABLE status. OR F.2.1 Be in MODE 3. AND F.2.2 Be in MODE 4.	48 hours 54 hours 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. ---------- G.1 Restore train to OPERABLE status. OR G.2.1 Be in MODE 3. AND G.2.2 Be in MODE 4.	 24 hours 30 hours 36 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. ---------- H.1 Restore train to OPERABLE status. OR H.2 Be in MODE 3.	 24 hours 30 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. One channel inoperable.	----------NOTE---------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. ----------	
	I.1 Place channel in trip.	72 hours
	OR	
	I.2. Be in MODE 2.	78 hours
J. One channel inoperable	----------NOTE---------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. ----------	
	J.1 Place channel in trip.	72 hours
	OR	
	J.2. Be in MODE 3.	78 hours
K. One channel inoperable	K.1.1 Place the channel in cut-out.	6 hours
	AND	
	K.1.2 Return the inoperable channel to an OPERABLE status	48 hours
	OR	
	K.2.1 Be in MODE 3.	54 hours
	AND	
	K.2.2 Be in MODE 5	84 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
L. One or more channels or trains inoperable.	L.1 Verify interlock is in required state for existing unit condition. OR L.2.1 Be in MODE 3. AND L.2.2 Be in MODE 4.	1 hour 7 hours 13 hours
M. One or more SG Water Level - Low Low Trip Time Delay channel(s) inoperable.	----------NOTE---------- The inoperable channel or one additional channel may be bypassed for up to 12 hours for surveillance testing of other channels. ---------- M.1 Set the Trip Time Delay to zero seconds. OR M.2 Place the affected SG Water Level - Low Low channel(s) in trip. OR M.3.1 Be in MODE 3. AND M.3.2 Be in MODE 4.	 72 hours 72 hours 78 hours 84 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
N. One channel inoperable.	N.1 Restore channel to OPERABLE status. OR N.2 Declare the associated AFW pump or MSIV inoperable.	48 hours Immediately
O. One channel inoperable	----------NOTE---------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. ---------- O.1 Place channel in trip. OR O.2.1 Be in MODE 3 AND O.2.2 Be in MODE 5.	 72 hours 78 hours 108 hours
P. One channel inoperable.	----------NOTE---------- 1. One additional channel may be bypassed for up to 12 hours for surveillance testing. 2. One channel may be bypassed for up to 12 hours for surveillance testing. ---------- P.1 Place channel in bypass. OR P.2.1 Be in MODE 3 AND P.2.2 Be in MODE 5.	 72 hours 78 hours 108 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
SR 3.3.2.2	Perform ACTUATION LOGIC TEST.	92 days on a STAGGERED TEST BASIS
SR 3.3.2.3	Not used.	
SR 3.3.2.4	Perform MASTER RELAY TEST.	92 days on a STAGGERED TEST BASIS
SR 3.3.2.5	Perform COT.	184 days
SR 3.3.2.6	Perform SLAVE RELAY TEST.	24 months
SR 3.3.2.7	Not used.	
SR 3.3.2.8	----------NOTE---------- Verification of setpoint not required for manual initiation functions. --- Perform TADOT.	24 months
SR 3.3.2.9	----------NOTE---------- This Surveillance shall include verification that the time constants are adjusted to the prescribed values. --- Perform CHANNEL CALIBRATION.	24 months
SR 3.3.2.10	----------NOTE---------- Not required to be performed for the turbine driven AFW pump until 24 hours after SG pressure is ≥ 650 psig. --- Verify ESF RESPONSE TIMES are within limits.	24 months on a STAGGERED TEST BASIS

(continued)

SURVEILLANCE REQUIREMENTS

----------NOTE----------
Refer to Table 3.3.6-1 to determine which SRs apply for each Containment Ventilation Isolation Function.

	SURVEILLANCE	FREQUENCY
SR 3.3.6.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.6.2	----------NOTE---------- This surveillance is only applicable to the actuation logic of the ESFAS Instrumentation. --- Perform ACTUATION LOGIC TEST.	92 days on a STAGGERED TEST BASIS
SR 3.3.6.3	----------NOTE---------- This surveillance is only applicable to the master relays of the ESFAS Instrumentation. --- Perform MASTER RELAY TEST.	92 days on a STAGGERED TEST BASIS
SR 3.3.6.4	Perform CFT.	92 days
SR 3.3.6.5	Perform SLAVE RELAY TEST.	24 months
SR 3.3.6.6	Not used	
SR 3.3.6.7	Perform CHANNEL CALIBRATION.	24 months
SR 3.3.6.8	Verify ESF Containment Ventilation Isolation RESPONSE TIME is within limits.	24 months on a STAGGERED TEST BASIS

PROPOSED TECHNICAL SPECIFICATION BASES CHANGES
(for information only)

INSERT 1

or the QPTR must be monitored once every 12 hours as per SR 3.2.4.2, including the SR 3.2.4.2 note, for QPTR verification. 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. 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 12-hour Frequency is 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. Seventy-eight hours are allowed to place the plant in MODE 3. The 78-hour completion time includes 72 hours for channel corrective maintenance, and an additional 6 hours for the MODE reduction as required by Action D.2.

INSERT 2

N.1 and N.2

Condition N applies to the RCP Breaker Position reactor trip function.

With one channel inoperable, the inoperable channel must be placed in the tripped condition within 6 hours. 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.

Allowance of this time interval takes into consideration the low probability of occurrence of an event during this period that may require the protection afforded by the Functions associated with Condition N.

Function 11 may not be bypassed since its logic is not 2 of 4 or 2 of 3, therefore, single failure would not be maintained.

INSERT 3

The 24 hours allowed to restore the inoperable train to OPERABLE status is justified in Reference 27. An additional 6 hours is allowed to place the unit in MODE 3.

INSERT 4

The 24-hour Completion Time is justified in Reference 27.

INSERT 5

The Required Actions have been modified by a Note. The Note allows one train to be bypassed for up to 4 hours for surveillance testing, provided the other train is OPERABLE. The 4-hour time limit is justified in Reference 27.

INSERT 6

26. WCAP-14333-P-A, Revision 1, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times," October 1998.

27. WCAP-15376-P-A, Revision 1, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," March 2003.

INSERT 7

The 24 hours allowed for restoring the inoperable train to OPERABLE status is justified in Reference 16.

INSERT 8

The 72 hours allowed to restore the channel to OPERABLE status or to place it in the tripped condition is justified in Reference 16.

INSERT 9

The Required Actions are modified by a Note that allows placing one channel in bypass for up to 12 hours while performing routine surveillance testing. The 12 hour time limit is justified in reference 16.

INSERT 10

The 72 hours allowed to restore the channel to OPERABLE status or to place it in the bypassed condition is justified in Reference 16.

INSERT 11

16. WCAP-14333-P-A, Revision 1, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times," October 1998.

17. WCAP-15376-P-A, Revision 1, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," March 2003.

BASES

ACTIONS

C.1, C.2.1, and C.2.2 (continued)

incapable of rod withdrawal within the next hour (e.g., by de-energizing all CRDMs, by opening the RTBs, or by de-energizing the motor generator (MG) sets). The additional hour for the latter provides sufficient time to accomplish the action in an orderly manner. With the rods fully inserted and the Rod Control System rendered 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.

Condition C is modified by a Note stating that while this LCO is not met for Functions 19, 20, or 21 in MODE 5 making the Rod Control System capable of rod withdrawal is not permitted. This note is in addition to the requirements of LCO 3.0.4 which preclude the transition from either MODE 3 or MODE 4 to MODE 3 or MODE 4 with the Rod control System capable of rod withdrawal or all rods not fully inserted for Functions 19, 20, or 21 with one channel or train inoperable.

and

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.

The NIS power range detectors provide input to the Rod 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 72 hours allowed to place the inoperable channel in the tripped condition is justified in WCAP-10271-P-A (Ref. 7).

Reference 26

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.

INSERT 1

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, including the SR 3.2.4.2 note, for 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)."

(continued)

BASES

ACTIONS D.1.1, D.1.2, D.2.1, D.2.2, and D.3 (continued)

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 12 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. In accordance with WCAP 10271, very specific circumstances are related to the use of this bypass condition. Since the NIS channels are not designed with Bypass-capable logic that meets the requirements of IEEE 279, the provisions for bypass only apply to a specific type of channel failure. To apply, the channel must fail in such a way that it does not trip the bistables. With this type of failure, the channel may be returned to service and considered "bypassed" under this Note. Specifically, the bypass condition is the state when a failed channel is taken out of the forced "tripped" state and placed in operation. Due to the failed nature of the channel, the channel cannot be assumed to be OPERABLE, and is therefore considered to be in a state of bypass when the channel failure is such that its bistables are not tripped. The provisions of WCAP 10271 specifically prohibit the use of jumpers or lifted leads to bypass these channels. In this configuration, a second channel can be tested or setpoints adjusted with the channel in the tripped mode without completing reactor trip logic. The 12 hour time limit is justified in Reference 8.

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. The performance of SR 3.2.4.2 per ACTION D.2.2 is subject to the SR 3.2.4.2 note. 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.

(continued)

BASES

ACTIONS (continued)

E.1 and E.2

Condition E applies to the following reactor trip Functions:

- 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; and
- SG Water Level—Low Low.

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 8.

If the operable 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, or one additional channel in the bypassed condition for Functions 6, 7, and 8b for up to 4 hours while performing routine surveillance testing of the other channels. The NOTE allows only the inoperable channel for FUNCTIONS 2b, 3a, 3b and 14.a to be bypassed for surveillance testing of other channels. In accordance with WCAP 10271, very specific circumstances are related to the use of this bypass condition for RTS Functions 2.b, 3.a, and 3.b.

(continued)

BASES

ACTIONS

E.1 and E.2 (continued)

Since these channels are not designed with Bypass-capable logic that meets the requirements of IEEE 279, the provisions for bypass only apply to a specific type of channel failure. To apply, the channel must fail in such a way that it does not trip the bistables. With this type of failure, the channel may be returned to service and considered "bypassed" under this Note. Specifically, the bypass condition is the state when a failed channel is taken out of the forced "tripped" state and placed in operation. Due to the failed nature of the channel, the channel cannot be assumed to be OPERABLE, and is therefore considered to be in a state of bypass when the channel failure is such that its bistables are not tripped. The provisions of WCAP 10271 specifically prohibit the use of jumpers or lifted leads to bypass these channels. In this configuration, a second channel can be tested with the channel in the tripped mode without completing reactor trip logic. The 6 hour time limit is justified in Reference 8.

12

26

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, the overlap of the power range detectors, 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.

(continued)

No Changes

BASES

ACTIONS (continued)

G.1 and G.2

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.

Required Action G.1 is modified by a Note to indicate that normal plant control operations that individually add limited positive reactivity (i.e., temperature or boron concentration fluctuations associated with RCS inventory management or temperature control) are not precluded by this Action, provided the SDM limits specified in the COLR are met and the requirements of LCOs 3.1.5, 3.1.6, and 3.4.2 are met.

H.1 - Not used

(continued)

No changes

BASES

ACTIONS (continued)

I.1

Condition I 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.

Required Action I.1 is modified by a Note to indicate that normal plant control operations that individually add limited positive reactivity (i.e., temperature or boron concentration fluctuations associated with RCS inventory management or temperature control) are not precluded by this Action, provided the SDM limits specified in the COLR are met and the requirements of LCOs 3.1.5, 3.1.6, and 3.4.2 are met.

J.1

Condition J applies to two inoperable Source Range Neutron Flux trip channels when in MODE 2, below the P-6 setpoint, and performing a reactor startup, or 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 and the unit enters Condition L.

(continued)

No Changes

BASES

ACTIONS (continued)

K.1, K.2.1, and K.2.2

Condition K 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 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 an OPERABLE status, action must be initiated within the same 48 hours to fully insert all rods. 1 additional hour is allowed to place the Rod Control System in a condition incapable of rod withdrawal (e.g., by de-energizing all CRDMs, by opening the RTBs, or by de-energizing the motor generator (MG) sets). Once these ACTIONS are completed the core is in a more stable condition. The allowance of 48 hours to restore the channel to OPERABLE status, and the additional hour to place the Rod Control System in a condition incapable of rod withdrawal, are justified in Reference 7.

L.1 and L.2

Condition L applies when the required number of OPERABLE Source Range Neutron Flux channels is not met in MODE 3, 4, or 5 with the RTBs open or with the Rod Control System incapable of rod withdrawal and all rods fully inserted. With the unit in this Condition, the NIS source range performs a monitoring function. With less than the required number of source range channels OPERABLE, operations involving positive reactivity additions shall be suspended immediately. This will preclude any power escalation.

Also, the SDM must be verified within 1 hour and once every 12 hours thereafter as per SR 3.1.1.1, SDM verification. With no source range channels OPERABLE, core protection is severely reduced. Verifying the SDM within 1 hour allows sufficient time to perform the calculations and determine that the SDM requirements are met. The SDM must also be verified once per 12 hours thereafter to ensure that the core reactivity has not changed. Required Action L.1 precludes any positive reactivity additions; therefore, core reactivity should not be increasing, and a 12 hour Frequency is adequate. The Completion Times of within 1 hour and once per 12 hours are based on operating experience in performing the Required Actions and the knowledge that unit conditions will change slowly.

Required Action L.1 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 operating with a positive MTC, must be evaluated to ensure they do not result in a loss of required SDM.

(continued)

BASES

ACTIONS (continued)

M.1 and M.2

Condition M 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.

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 trip Function, placing the channel in the tripped condition results in a partial trip condition requiring only one additional channel to initiate a reactor trip above the P-7 and P-8 setpoints. These 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. The 6 hours allowed to place the channel in the tripped condition is justified in Reference 8. 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 Reactor Coolant Flow - Low reactor trip function goes from 1 of 4 logic to 2 of 4 logic below the P-8 setpoint; however, the Required Action must take the plant below the P-7 setpoint, if an inoperable channel is not tripped within 6 hours, due to the shared components between this function and the Reactor Coolant Flow - Low trip function.

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 M.

(continued)

BASES

ACTIONS

M.1 and M.2 (continued)

The Required Actions have been modified by a Note that allows placing the inoperable channel, or one additional channel for Function 8a, in the bypassed condition for up to 12 hours while performing routine surveillance testing of the other channels. The Note allows only the inoperable channel for Functions 9, 10, 12 and 13 to be bypassed for surveillance testing of other channels. Function 11 may not be bypassed since its logic is not 2 of 4 or 2 of 3, therefore, single failure would not be maintained. In accordance with WCAP 10271, very specific circumstances are related to the use of this bypass condition for RTS Functions 12 and 13. Since these channels are not designed with Bypass-capable logic that meets the requirements of IEEE 279, the provisions for bypass only apply to a specific type of channel failure. To apply, the channel must fail in such a way that it does not trip the bistables. With this type of failure, the channel may be returned to service and considered "bypassed" under this Note. Specifically, the bypass condition is the state when a failed channel is taken out of the forced "tripped" state and placed in operation. Due to the failed nature of the channel, the channel cannot be assumed to be OPERABLE, and is therefore considered to be in a state of bypass when the channel failure is such that its bistables are not tripped. The provisions of WCAP 10271 specifically prohibit the use of jumpers or lifted leads to bypass these channels. In this configuration, a second channel can be tested with the channel in the tripped mode without completing reactor trip logic. The 12 hour time limit is justified in Reference 20.

INSERT 2 → N.1 and N.2 - Not used

(continued)

BASES

ACTIONS (continued)

O.1 and O.2

Condition O applies to Turbine Trip on Low Auto-Stop Oil Pressure. 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 tripped condition and the 4 hours allowed for reducing power are justified in Reference 2.

The Required Actions have been modified by a Note that allows placing an inoperable channel in the bypassed condition for up to 48 hours while performing routine surveillance testing of the other channels. In accordance with WCAP 10271, very specific circumstances are related to the use of this bypass condition for RTS Function 16. Since this channel is not designed with Bypass-capable logic that meets the requirements of IEEE 279, the provisions for bypass only apply to a specific type of channel failure. To apply, the channel must fail in such a way that it does not trip the bistables. With this type of failure, the channel may be returned to service and considered "bypassed" under this Note. Specifically, the bypass condition is the state when a failed channel is taken out of the forced "tripped" state and placed in operation. Due to the failed nature of the channel, the channel cannot be assumed to be OPERABLE, and is therefore considered to be in a state of bypass when the channel failure is such that its bistables are not tripped. The provisions of WCAP 10271 specifically prohibit the use of jumpers or lifted leads to bypass this channel. In this configuration, a second channel can be tested with the channel in the tripped mode without completing reactor trip logic. The 48 hour time limit is justified in Reference 2.

P.1 and P.2

Condition P applies to Turbine Trip on Turbine Stop Valve Closure. With one or more channels inoperable, the inoperable channel must be placed in the trip condition within 6 hours. For the Turbine Trip on Turbine Stop Valve Closure function, where four-of-four channels are required to initiate a reactor trip; hence more than one channel may be placed in trip. If the channel(s) 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(s) in the tripped condition and the 4 hours allowed for reducing power are justified in Reference 2.

(continued)

BASES

ACTIONS (continued)

Q.1 and Q.2

Condition Q 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 Q.1) or the unit must be placed in MODE 3 within the next 6 hours. The Completion Time of 6 hours (Required Action Q.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 Q.2) is reasonable, based on operating experience, to reach 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 bypassing one train up to 4 hours for surveillance testing, provided the other train is OPERABLE.

R.1 and R.2

Condition R 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 Condition C entry if one RTB train is inoperable.

The Required Actions have been modified by two Notes. Note 1 allows one train to be bypassed for up to 2 hours for surveillance testing, provided the other train is OPERABLE. Note 2 allows one RTB to be bypassed only for the time required for performing maintenance on undervoltage or shunt trip mechanisms per Condition U if the other RTB train is OPERABLE. The time limits are justified in Reference 7.

(continued)

No Changes

BASES

ACTIONS (continued)

S.1 and S.2

Condition S applies to the P-6 and P-10 interlocks. With one or more channels inoperable, the associated interlock must be verified by observation of the associated permissive annunciator window 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.

T.1 and T.2

Condition T applies to the P-7, P-8, P-9, and P-13 interlocks. With one or more channel(s) inoperable, the associated interlock must be verified by observation of the associated permissive annunciator window 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.

(continued)

BASES

No Changes

ACTIONS (continued)

U.1 and U.2

Condition U 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 reach MODE 3 from full power in an orderly manner and without challenging unit systems.

With the unit in MODE 3, Condition C is entered if the inoperable trip mechanism has not been restored and the Rod Control System is capable of rod withdrawal or one or more rods are not fully inserted. The affected RTB shall not be bypassed while one of the diverse features is inoperable except for the time required to perform maintenance to restore the inoperable trip mechanism to OPERABLE status, consistent with Ref. 13.

The Completion Time of 48 hours for Required Action U.1 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.

V.1 - Not used

(continued)

BASES

ACTIONS (continued)

W.1 and W.2

Condition W applies to the Seismic Trip, in MODES 1 and 2. With one of the channels inoperable, START UP and/or POWER OPERATION may proceed provided the inoperable channel is placed in trip within the next 6 hours. If a direction is inoperable, then the channel must be considered inoperable. Placing the channel in the tripped condition creates a partial trip condition requiring only one out of two logic from the remaining locations for reactor trip actuation.

The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypassed condition for up to 72 hours while performing surveillance testing or maintenance. The allowed 72 hour bypass time is reasonable based on the low probability of an event occurring while the channel is bypassed and on the time required to perform the required surveillance testing.

X.1, X.2 and X.3

Condition X applies to the Trip Time Delay (TTD) circuitry for the SG Water Level-Low Low trip function in MODES 1 and 2. With one or more TTD circuitry delay timers inoperable or the RSC delta-T equivalent power input inoperable, 6 hours are allowed to adjust the threshold power level for no time delay to 0% RTP. This sets the TTD timer to zero seconds and effectively removes its input from the SG water level circuit. If the TTD timer cannot be set to zero seconds for a single SG water level control, then the affected SG water level low-low channel must be placed in trip. Only one SG water level low-low channel can be placed in the trip position without tripping the plant. The Completion Time of 6 hours is reasonable considering the nature of these functions and the low probability of an event occurring during this interval as justified in Reference 8.

If the TTD threshold power for no time delay cannot be adjusted to 0% RTP (zero seconds time delay) or the single SG water level 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. ~~The 12 hour allowed to place the unit in MODE 3~~ 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 SG water level channel or one additional channel in the bypassed condition for up to 6 hours while performing routine surveillance testing of the other channels.

(continued)

BASES (continued) No Changes

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.

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 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.

SR 3.3.1.1

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.

(continued)

No Changes

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.2

SR 3.3.1.2 compares the calorimetric heat balance calculation to the power range channel output every 24 hours. If the calorimetric heat balance calculation results exceed the power range channel output by more than + 2% RTP, the power range channel is not declared inoperable, but the excore channel gains must be adjusted. The power range channel output shall be adjusted consistent with the calorimetric heat balance calculation results if the calorimetric calculation exceeds the power range channel output by more than + 2% RTP. If the power range channel output cannot be properly adjusted, the channel is declared inoperable.

To assure a reactor trip consistent with the safety analysis, adjustments to the power range channel in the decreasing direction are not required. This allowance does not preclude making indicated power adjustments, if desired, when the calorimetric heat balance calculation power 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.

At lower power levels (<45% RTP), calorimetric data are inaccurate.

Discretion must be exercised if the power range channel output is adjusted in the decreasing power direction due to a part-power calorimetric (<45% RTP). This action could introduce a non-conservative bias at higher power levels which could delay an NIS reactor trip until power is above the power range high safety analysis limit (SAL) of 118% RTP. The cause of the 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 determined by a ΔP measurement across a feedwater venturi. While the measurement uncertainty remains constant in ΔP span 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 ΔP error has not changed.

To assure a reactor trip below the power range high SAL, the maximum allowable Power Range Neutron Flux-High trip Setpoint is limited according to DCPP surveillance procedures, prior to adjusting the power range channel output in the decreasing power direction whenever the calorimetric power is between 15% and 45% RTP.

(continued)

No changes

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.2 (continued)

For example, to assure a reactor trip below the power range high SAL, the Power Range Neutron Flux-High trip Setpoint is reduced as necessary prior to adjusting the power range channel output in the decreasing power direction whenever the calorimetric power is ≥ 15% RTP and <45% RTP. The maximum allowable Power Range Neutron Flux-High trip Setpoint may be increased with increasing RTP in accordance with surveillance procedures. Following a plant refueling outage, it is prudent to reduce the Power Range Neutron Flux–High trip Setpoint prior to startup.

Before the Power Range Neutron Flux–High trip Setpoint is re-set to its nominal full power value (≤109% RTP), the power range channel calibration must be confirmed based on a calorimetric performed at ≥ 45% RTP.

The Note to SR 3.3.1.2 clarifies that this 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, but prior to exceeding 30% RTP. A power level of 15% RTP is chosen based on plant stability, i.e., automatic rod control capability and the turbine generator synchronized to the grid. The 24-hour allowance after increasing THERMAL POWER above 15% RTP provides a reasonable time to attain a scheduled power plateau, establish the requisite conditions, perform the required calorimetric measurement, and make any required adjustments in a controlled, orderly manner and without introducing the potential for extended operation at high power levels with instrumentation that has not been verified to be acceptable for subsequent use.

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 that a difference between the calorimetric heat balance calculation and the power range channel output of more than + 2% RTP is not expected in any 24 hour period.

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

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. The excore NIS channel shall be adjusted if the absolute difference between the incore and excore AFD is ≥ 3%. The comparison checks for differences due to changes in core power distribution since the last calibration.

(continued)

No Changes

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.3 (continued)

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.

The Note to SR 3.3.1.3 clarifies that the 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. This Note allows power ascensions and associated testing to be conducted in a controlled and orderly manner, at conditions that provide acceptable results and without introducing the potential for extended operation at high power levels with instrumentation that has not be verified to be acceptable for subsequent use. Due to such effects as shadowing from the relatively deep control rod insertion and, to a lesser extent, the dependency of the axially-dependent radial leakage on the power level, the relationship between the incore and excore indications of axial flux difference (AFD) at lower power levels is variable. Thus, it is prudent to defer the calibration of the excore AFD against the incore AFD until more stable conditions are attained (i.e., withdrawn control rods and higher power level). The AFD is used as an input to the Overtemperature ΔT reactor trip function and for assessing compliance with ITS LCO 3.2.3, "AXIAL FLUX DIFFERENCE." Due to the DNB benefits gained by administratively restricting the power level to 50% RTP, no limits on AFD are imposed below 50% RTP by LCO 3.2.3; thus, the proposed change is consistent with LCO 3.2.3. requirements below 50% RTP. Similarly, sufficient DNB margins are realized through operation below 50% RTP that the intended function of the Overtemperature ΔT reactor trip function is maintained, even though the excore AFD indication may not exactly match the incore AFD indication. Based on plant operating experience, 24 hours is a reasonable time frame to limit operation above 50% RTP while completing the procedural steps associated with the surveillance in an orderly manner.

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, since the changes in neutron flux are slow during the fuel cycle, the expected change in the absolute difference between the incore and excore AFD will be less than 3 percent AFD during this interval.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.4

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.

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 manual shunt trip only. A Note has been added to indicate that this test must be performed on the bypass breaker prior to placing it in service.

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.

justified in Reference 27.

SR 3.3.1.5

SR 3.3.1.5 is the performance of an ACTUATION LOGIC TEST. The seismic trip is tested every 31 days on a STAGGERED TEST BASIS. 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 with the RTB bypass breaker installed, thus preventing inadvertent actuation. Through the semiautomatic tester, all possible logic combinations, with and without applicable permissives, are tested for each protection function including operation of the P-7 permissive which is a logic function only. The P-7 alarm circuit is excluded from this testing since it only mimics the actions of the SSPS and cannot prevent the permissive from performing its 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.

justified in Reference 27.

SR 3.3.1.6

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.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.6 (continued)

A Note modifies SR 3.3.1.6. The Note states that this Surveillance is required only if reactor power is ≥ 75% RTP and that 72 hours after thermal power is ≥ 75% RTP is allowed for performing the first surveillance after reaching 75% RTP. The SR is deferred until a scheduled testing plateau above 75% RTP is attained during the post-outage power ascension. During a typical post-refueling power ascension, it is usually necessary to control the axial flux difference at lower power levels through control rod insertion. After equilibrium conditions are achieved at the specified power plateau, a flux map must be taken and the required data collected. The data is typically analyzed and the appropriate excore calibrations completed within 48 hours after achieving equilibrium conditions. An additional time allowance of 24 hours is provided during which the effects of equipment failures may be remedied and any required re-testing may be performed.

The allowance of 72 hours after equilibrium conditions are attained at the testing plateau provides sufficient time to allow power ascensions and associated testing to be conducted in a controlled and orderly manner at conditions that provide acceptable results and without introducing the potential for extended operation at high power levels with instrumentation that has not been verified to be acceptable for subsequent use.

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

SR 3.3.1.7

184

SR 3.3.1.7 is the performance of a COT every ~~92~~ days.

A COT is performed on each required channel to ensure the entire channel will perform the intended Function.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.7 (continued)

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.

The "as found" and "as left" values must also be recorded and reviewed for consistency with the assumptions of Reference 26.

SR 3.3.1.7 is modified by two notes. Note 1 provides a 4 hour 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. Note 2 requires that the quarterly COT for the source range instrumentation shall include verification by observation of the associated permissive annunciator window that the P-6 and P-10 interlocks are in their required state for the existing unit conditions. If this surveillance or if SR 3.3.1.8 has been performed within the previous 92 days, the requirements of this surveillance are satisfied.

The Frequency of 92 (184) days is justified in Reference 27.

SR 3.3.1.8

SR 3.3.1.8 is the performance of a COT as described in SR 3.3.1.7 it is modified by the same Note that this test shall include verification that the P-6 and P-10 interlocks are in their required state for the existing unit conditions by observation of the associated permissive annunciator window. The Frequency is modified by a Note that allows this surveillance to be satisfied if it has been performed within 92 (184) days of the Frequencies prior to reactor startup, 12 hours after reducing power below P-10, and four hours after reducing power below P-6, as discussed below. 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 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)

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.8 (continued)

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~~ 184 days thereafter applies if the plant remains in the MODE of Applicability after the initial performances of prior to reactor startup, 12 hours after reducing power below P-10, and four hours after reducing power below P-6. 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 12 hour or 4 hour limit, as applicable. These time limits are reasonable, based on operating experience, 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 the periods discussed above. The frequency of 184 days is justified in Reference 27.

SR 3.3.1.9

SR 3.3.1.9 is the performance of a TADOT and is performed every 92 days, as justified in Reference 7.

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.

SR 3.3.1.10

A CHANNEL CALIBRATION is performed every 24 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.

CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the DCPP 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.

(continued)

No Changes

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.10 (continued)

Whenever an RTD is replaced in Functions 6, 7, or 14, the next required CHANNEL CALIBRATION of the RTDs is accomplished by an inplace cross calibration that compares the other sensing elements with the recently installed sensing element.

The Frequency of 24 months is based on the assumed calibration interval in the determination of the magnitude of equipment drift in the setpoint methodology.

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.

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 24 months. The CHANNEL CALIBRATION for the power range nuclear instruments includes a normalization of the detectors based on a power calorimetric and flux map performed above 15% RTP, and a test that shows allowed variances of detector voltage do not effect detector operation. The CHANNEL CALIBRATION for the intermediate range nuclear instruments includes a test that shows allowed variances of detector voltage do not effect detector operation. The CHANNEL CALIBRATION for the source range nuclear instruments includes a periodic test that optimizes detector high voltage and a conditional test for establishing baseline channel settings after maintenance. The baseline test includes obtaining detector high voltage and discriminator bias curves and using this data to evaluate detector and channel settings based on manufacturers' recommendations and industry operating experience.

This SR is modified by three Notes. Note 1 state that neutron detectors are excluded from the CHANNEL CALIBRATION. Note 2 states that the test shall include verification that the time constants are adjusted to the prescribed values where applicable.Note 3 states that, prior to entry into MODE 2 or 1, the power and intermediate range detector plateau voltage verification (as described above) is not required to be current until 72 hours after achieving equilibrium conditions with THERMAL POWER ≥ 95% RTP. Equilibrium conditions are achieved when the core is sufficiently stable at intended operating conditions to perform a meaningful detector plateau voltage verification. The allowance of 72 hours after equilibrium conditions are attained at the testing plateau provides sufficient time to allow power

(continued)

No Changes

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.11 (continued)

ascension testing to be conducted in a controlled and orderly manner at conditions that provide acceptable results and without introducing the potential for extended operation at high power levels with instrumentation that has not been verified to be OPERABLE for subsequent use. The source range curves are obtained as required under the conditions that apply during a plant outage.

The 24 month Frequency is based on past operating experience, which has shown these components usually pass the Surveillance when performed on the 24 month Frequency. The conditions for obtaining the source range curves and for verifying the power and intermediate range detector operation are described above. The other remaining portions of the CHANNEL CALIBRATIONS may be performed either during a plant outage or during plant operation.

SR 3.3.1.12

SR 3.3.1.12 is the performance of a CHANNEL CALIBRATION of the seismic trip, every 24 months. For function 22, Seismic Trip, the calibration shall encompass, as a minimum, the sensor relays, the SSPS, and associated required alarms. Since it is impractical to routinely remove and ship the seismic trigger packages to an offsite facility to verify calibration on a shaker table, the sensors shall be verified by introducing a known acceleration to voltage relationship to the sensor and verifying the proper action, in accordance with the manufacturers recommendations.

The Frequency is justified by the assumption of an 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

SR 3.3.1.13

SR 3.3.1.13 is the performance of a COT of RTS interlocks every 24 months.

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

SR 3.3.1.14 is the performance of a TADOT of the Manual Reactor Trip, RCP Breaker Position, Seismic Trip and the SI Input from ESFAS. This TADOT is performed every 24 months. The Manual Reactor Trip

(continued)

No Changes

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.14 (continued)

test shall independently verify the OPERABILITY of the undervoltage and shunt trip mechanisms for the Reactor Trip Breakers and Reactor Trip Bypass Breakers. Breaker actuation is verified using the local indicator since physical verification of the main contacts is not practical. This is acceptable based on breaker design and industry operating and maintenance experience. The Seismic Trip TADOT shall, as a minimum, verify the OPERABILITY of the channel from the seismic sensor relays to the input logic of the SSPS. The remainder of the channel is tested under the SR 3.3.1.5 or 3.3.1.12 requirements.

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. The Functions affected have no setpoints associated with them except for the Seismic Trip that is calibrated by SR 3.3.1.12 at the same 24 month frequency.

SR 3.3.1.15

SR 3.3.1.15 is the performance of a TADOT of Turbine Trip Functions. This TADOT 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.

SR 3.3.1.16

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 and the individual functions requiring RESPONSE TIME verification are included in Equipment Control Guideline (ECG) 38.1. 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 (i.e., control and shutdown rods fully inserted in the reactor core).

(continued)

No Changes

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.16 (continued)

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.

The response time testing for the SG water level low-low does not include trip time delays. Response times include the transmitters, Eagle-21 process protection cabinets, solid state protection system cabinets, and actuation devices only. This reflects the response times necessary for THERMAL POWER in excess of 50 percent RTP. For those functions without a specified response time, SR 3.3.1.16 is not applicable.

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 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) inplace, 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" (Ref. 8) 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.

The allocations for sensor response times must be verified prior to placing the component in initial 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. One example where response time could be affected is replacing the sensing assembly of a transmitter.

As appropriate, each channel's response time must be verified every 24 months on a STAGGERED TEST BASIS. Each verification shall

(continued)

No Changes

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.16 (continued)

include at least one train such that both trains are verified at least once per 48 months and one channel per function such that all channels are tested at least once every N times 24 months where N is the total number of redundant channels in a specific RT function. Testing of the final actuation devices is included in the verification. 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 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

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. The source range preamplifiers are also excluded. This is acceptable because the principles of operation of the preamplifier have been evaluated and a determination made that there are no credible failure mechanisms that could affect response time that would not be detected during routine testing.Response time of the neutron flux signal portion of the channel shall be measured from detector output or input to the first electronic component in the channel, exclusive of the preamplifier.

REFERENCES

1. FSAR, Chapter 7.
2. FSAR, Chapter 6.
3. FSAR, Chapter 15.
4. IEEE Std. 279-1971.
5. 10 CFR 50.49.
6. Blank
7. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990.

(continued)

BASES

REFERENCES (continued)

8. WCAP 13632 - PA-1, Rev. 2 "Elimination of Pressure Sensor Response Time Testing Requirements."
9. FSAR, Chapter 9.2.7 & 9.2.2.
10. FSAR, Chapter 10.3 & 10.4
11. FSAR, Chapter 8.3.
12. DCM S -38A, "Plant Protection System"
13. WCAP -13878, "Reliability of Potter & Brumfield MDR Relays", June 1994.
14. WCAP -13900, "Extension of Slave Relay Surveillance Test intervals", April 1994.
15. WCAP -14117, "Reliability Assessment of Potter and Brumfield MDR Series Relays."
16. WCAP -9226, "Reactor Core Response to Excessive Secondary Steam Releases," Revision 1, January 1978.
17. WCAP -11082, Rev. 5, "Westinghouse Setpoint Methodology for Protection Systems, Diablo Canyon Units 1 and 2, 24 Month Fuel Cycle Evaluation," January 1997.
18. NSP -1-20-13F Unit 1 "Turbine Auto Stop Low Oil Pressure."
19. NSP -2-20-13F Unit 2 "Turbine Auto Stop Low Oil Pressure."
20. J -110 "24 Month Fuel Cycle Allowable Value Determination / Documentation and ITDP Uncertainty Sensitivity."
21. IEEE Std. 338 -1977.
22. License Amendment 61/60, May 23, 1991.
23. Westinghouse Technical Bulletin ESBU -TB-92-14-R1, "Decalibration Effects of Calorimetric Power Measurements on the NIS High Power Reactor Trip at Power Levels less than 70% RTP," dated February 6, 1996.
24. DCPP NSSS Calculation N -212, Revision 1.
25. License Amendments 157/157, June 2, 2003.

INSERT 6 →

BASES

ACTIONS (continued)

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.

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.

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
- Phase B Isolation

INSERT 7

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This action addresses the train orientation of the SSPS and the master and slave relays. If one train is inoperable, 8 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

(continued)

BASES

ACTIONS

C.1, C.2.1 and C.2.2 (continued)

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~~ train surveillance.

D.1, D.2.1, and D.2.2

Condition D applies to:

- SI - Pressurizer Pressure — Low;
- SI - Steam Line Pressure — Low;
- Steam Line Isolation - Steam Line Pressure — Negative Rate — High;
- Steam Line Isolation - Steam Line Pressure — Low; and
- Auxiliary Feedwater - SG Water level — Low Low;

If one channel is inoperable, 8 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 (excluding pressurizer pressure - low which is two-out-of-four due to its control input function). Therefore, failure of one channel places the Function in a two-out-of-two configuration. The inoperable channel must be tripped to place the Function in a one-out-of-two configuration that satisfies redundancy requirements. Since pressurizer pressure is used for control and SSPS input, its coincidence is two-out-of-four to provide to required reliability and redundancy. Failure of one channel places the function in a two-out-of-three configuration. The inoperable channel must be placed in the tripped condition to place the Function in a one-out-of-three configuration that satisfies the reliability and redundancy requirements. ← INSERT 8

(continued)

BASES

ACTIONS

D.1, D.2.1, and D.2.2 (continued)

Failure to restore the inoperable channel to OPERABLE status or place it in the tripped condition within 72 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 or one additional channel for Function 1.d to be bypassed for up to 12 hours for surveillance testing of other channels. For Functions 1.e, 4.d(1), 4.d(2) and 6.d(1) only the inoperable channel may be bypassed for surveillance testing of the 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 12 hours allowed for testing, are justified in Reference 16.

E.1, E.2.1, and E.2.2

Condition E applies to:

- Steam Line Isolation - Containment Pressure - High-high

This signal does not 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 of the Containment Pressure input 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.

(continued)

BASES

ACTIONS

E.1, E.2.1, and E.2.2 (continued)

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 72 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 72 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 12 hours for surveillance testing. Placing a second channel in the bypass condition for up to 12 hours for testing purposes is acceptable based on the results of Reference 16.

INSERT 9

F.1, F.2.1, and F.2.2

Condition F applies to the P-4 Interlock.

For the P-4 Interlock Function, this action addresses the train orientation of the SSPS. If a train is inoperable, 48 hours is allowed to return it to OPERABLE status. The specified Completion Time is reasonable considering the nature of this Function, 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 function noted above.

(continued)

BASES

ACTIONS (continued)

G.1, G.2.1 and G.2.2

Condition G applies to the automatic actuation logic and actuation relays for the Steam Line 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 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.

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.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.

(continued)

BASES

ACTIONS

H.1 and H.2 (continued)

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.

I.1 and I.2

Condition I applies to Auxiliary Feedwater - 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 additional tripped channel will result in actuation. The 6 hour Completion Time is justified in Ref. 6. 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 2 with in the following 6 hours. The allowed Completion time of 6 hours is reasonable, based on operating experience, to reach MODE 2 from full power conditions in an orderly manner without challenging unit systems. In MODE 2, this Function is no longer required OPERABLE.

The Required Actions are modified by a Note that allows the inoperable channel to be bypassed for up to 2 hours for surveillance testing of other channels. In accordance with WCAP 10271, very specific circumstances are related to the use of this bypass condition for ESFAS Functions 6.g. Since this channel is not designed with Bypass-capable logic that meets the requirements of IEEE 279, the provisions for bypass only apply to a specific type of channel failure. To apply, the channel must fail in such a way that it does not trip the bistables. With this type of failure, the channel may be returned to service and considered "bypassed" under this Note. Specifically, the bypass condition is the state when a failed channel is taken out of the forced "tripped" state and placed in operation. Due to the failed nature of the channel, the channel cannot be assumed to be OPERABLE, and is therefore considered to be in a state of bypass when the channel failure is such that its bistables are not tripped. The provisions of WCAP 10271 specifically prohibit the use of jumpers or lifted leads to bypass this channel. In this configuration, a second channel can be tested with the channel in the tripped mode without completing ESFAS logic. The 8 hours allowed to place the inoperable channel in the tripped condition, and the 2 hours allowed for a second channel to be in the bypassed condition for testing, are justified in Reference 8.

(continued)

BASES

ACTIONS (continued)

J.1 and J.2

Condition J applies to the Turbine Trip and Feedwater Isolation Actuation signal resulting from Steam Generator Level - High-High (P-14).

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 logic will result in actuation. The 8 hour Completion Time is justified in Reference 8. Failure to restore the inoperable channel to OPERABLE status or place in the tripped condition within 8 hours requires the unit to be placed in MODE 3 within 12 hours. The allowed Completion time of 12 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, this Function is 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 8 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.

K.1.1, K.1.2, K.2.1 and K.2.2

Condition K applies to the Residual Heat Removal Pump Trip on RWST Level - Low. Restoring the channel to OPERABLE status or placing the inoperable channel in the bypass (cut-out) 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 low). Placing the out-of-service channel in cut-out removes that channel from the trip logic, similar to a bypass function. This provides a two-out-of-two trip logic from the remaining channels. The 6 hour Completion Time is justified in Reference 8. If the channel cannot be placed in the cut-out condition within 6 hours, and returned to an OPERABLE status within 48 hours, the unit must be brought to MODE 3 within 54 hours and MODE 5 within 84 hours. The allowed Completion Times for shutdown 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 pump trip function noted above.

(continued)

BASES

ACTIONS (continued)

L.1, L.2.1 and L.2.2

Condition L applies to the P-11 interlock.

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 verification determination can be made by observation of the associated annunciator window(s). 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.

M.1, M.2, M.3.1 and M.3.2

Condition M applies to the Trip Time Delay (TTD) circuitry for the SG Water Level-Low Low actuation of the turbine-driven AFW pump and is required to be OPERABLE in MODES 1, 2 and 3. With one or more TTD circuitry delay timers inoperable or the RSC ΔT equivalent power input inoperable 8 hours are allowed to adjust the threshold power level for no time delay to 0% RTP. This sets the TTD timer to zero seconds and effectively removes its input for the SG water level circuit. If the TTD timer cannot be set to zero seconds for a single SG water level control, then the affected SG water level low-low channel must be placed in trip. Only one SG water level low-low channel can be placed in trip position without tripping the plant. The Completion Time of 8 hours is reasonable considering the nature of these functions and the low probability of an event occurring during this interval as justified in Reference 8.

If the TTD threshold power for no time delay cannot be adjusted to 0% RTP (zero seconds time delay) or the single SG water level channel cannot be placed in the trip condition within the specified Completion Time, the unit must be placed in MODE 4 where these Functions are not required OPERABLE. A completion time of 12 hours is allowed to place the unit in MODE 3 and 18 hours for MODE 4. These completion times are reasonable time, based on operating experience, to place the unit in MODE 4 from full power in an orderly manner and without challenging unit systems. In MODE 4 there are no analyzed transients requiring the use of the turbine-driven AFW pump.

(continued)

BASES

ACTIONS

M.1, M.2, M.3.1 and M.3.2 (continued)

The Required Actions have been modified by a note that allows placing the SG water level channel or one additional channel in the bypassed condition for up to 4 hours while performing routine surveillance testing of the other channels.

N.1 or N.2

Condition N applies to:

- Manual Initiation of Steam Line Isolation; and
- Manual Initiation of Auxiliary Feedwater.

If a channel is inoperable, 48 hours is allowed to return the channel to an 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 associated pump or valve shall be declared inoperable immediately and the REQUIRED ACTION of 3.7.5 or 3.7.2 as applicable complied with immediately.

O.1 or O.2.1 and O.2.2

Condition O applies to Safety Injection resulting from Containment Pressure - High.

If one channel is inoperable, 6 hours are allowed to restore the channel to OPERABLE status or to place it in the tripped condition. Failure of one channel places the function in a two-out-of-two configuration since the trip coincidence is two-out-of-three. The inoperable channel must be tripped to place the Function in a one-out-of-two configuration that satisfies redundancy requirements. ← INSERT 8

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 12 hours and MODE 5 in 42 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, 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.

(continued)

BASES

ACTIONS (continued)

P.1 or P.2.1 and P.2.2

Condition P applies to:

Containment Spray - Containment Pressure - High-High.

Containment Isolation - Phase B Isolation - Containment Pressure - High-High

Neither 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. The containment spray signal is also interlocked with SI and will not initiate without simultaneous SI and containment spray signals.

To avoid the inadvertent actuation of containment spray and Phase B containment isolation, the inoperable channel 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 tripped condition within 6 hours requires the unit be placed in MODE 3 within 12 hours, and MODE 5 in 84 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, 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. 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.

(continued)

No Changes

BASES (continued)

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 to clarify 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.

SR 3.3.2.1

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 established in STP I-1A, 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.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.2.2

SR 3.3.2.2 is the performance of an ACTUATION LOGIC TEST. The SSPS is tested every 92 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 92 days on a STAGGERED TEST BASIS is adequate. It is based on industry operating experience, considering instrument reliability and operating history data. Justified in Reference 17.

SR 3.3.2.3 - Not used

SR 3.3.2.4

SR 3.3.2.4 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 92 days on a STAGGERED TEST BASIS. The time allowed for the testing (4 hours) ~~and the surveillance interval are~~ is justified in Reference 8. The frequency of 92 days on a STAGGERED TEST BASIS is justified in Reference 17.

SR 3.3.2.5

SR 3.3.2.5 is the performance of a COT.

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 3.3.1-1.

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.

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 17.

(continued)

No Changes

BASES

SURVEILLANCE REQUIREMENTS (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 24 months. The Frequency is adequate, based on operating experience, considering relay reliability and operating history data (Ref. 7)

SR 3.3.2.7 - Not used

SR 3.3.2.8

SR 3.3.2.8 is the performance of a TADOT. This test is a check of the Manual Actuation Functions (except AFW; see SR 3.3.2.13). It is performed every 24 months. Each Manual Actuation Function is tested up to, and including, the master relay coils. 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.

SR 3.3.2.9

SR 3.3.2.9 is the performance of a CHANNEL CALIBRATION.

A CHANNEL CALIBRATION is performed every 24 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.

(continued)

No Changes

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.9 (continued)

Whenever an RTD is replaced in Function 6.d., the next required CHANNEL CALIBRATION of the RTDs is accomplished by an inplace cross calibration that compares the other sensing elements with the recently installed sensing element.

The Frequency of 24 months is based on the assumption of an 24 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.

SR 3.3.2.10

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 and the individual Functions requiring RESPONSE TIME Verification are included in ECG 38.2. 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 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 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 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) inplace, onsite, or offsite (e.g., vendor) test measurements, or 3) utilizing vendor engineering specifications. WCAP-13632-P-A, revision 2, "elimination of Pressure sensor

(continued)

No Changes

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.10 (continued)

Response time Testing requirements," dated January 1996, provides the basis and the methodology of 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.

The allocations for sensor response times must be verified prior to placing the component in initial 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. One example where response time could be affected is replacing the sensing assembly of a transmitter.

ESF RESPONSE TIME tests are conducted on a 24 month STAGGERED TEST BASIS.

Each verification shall include at least one train such that both trains are verified at least once per 48 months and one channel per function such that all channels are tested at least once every N times 24 months where N is the total number of redundant channels in a specific ESFAS function. Testing of the final actuation devices, which make up the bulk of the response time, is included in the testing of each train. Therefore, staggered testing results in response time verification of one train of devices every 24 months. The 24 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.

This SR is modified by a Note that clarifies that the turbine driven AFW pump is tested within 24 hours after reaching 650 psig in the SGs.

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. The 24 month Frequency is based on operating experience.

The SR is modified by a Note that excludes verification of setpoints during the TADOT. The Function tested has no associated setpoint.

(continued)

No Changes

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.2.12

SR 3.3.2.12 is the performance of an ACTUATION LOGIC TEST. This SR is applied to the RHR Pump Trip on RWST Level-Low actuation logic and relays which are not processed through the SSPS. This test is performed every 24 months. The frequency is adequate based on site and industry operating experience, considering equipment reliability and historical data.

SR 3.3.2.13

SR 3.3.2.13 is the performance of a TADOT. This test is a check of the Manual Actuation Function for AFW. It is performed every 18 months. Each Manual Actuation Function is tested up to, and including, the master relay coils. 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. 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.

REFERENCES

1. FSAR, Chapter 6.
2. FSAR, Chapter 7.
3. FSAR, Chapter 15.
4. IEEE Std.279-1971.
5. 10 CFR 50.49.
6. Blank
7. WCAP-13900, "Extension of Slave Relay Surveillance Test intervals", April 1994
8. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990.

(continued)

BASES

REFERENCES (continued)

9. WCAP-13878, "Reliability of Potter & Brumfield MDR Relays", June 1994.

10. WCAP -14117, "Reliability Assessment of Potter and Brumfield MDR Series Relays."

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

12. WCAP -11082, Revision 5, "Westinghouse Setpoint Methodology for Protection Systems, Diablo Canyon Units 1 and 2, 24 Month Fuel Cycle Evaluation," January 1997.

13. Calculation J -54, "Nominal Setpoint Calculation for Selected PLS Setpoints."

14. J -110, "24 Month Fuel Cycle Allowable Value Determination / Documentation and ITDP Uncertainty Sensitivity."

15. License Amendment 61/60, May 23, 1991.

INSERT 11

BASES (continued)

SURVEILLANCE REQUIREMENTS

A Note states that Condition C is applicable during CORE ALTERATIONS and during movement of irradiated fuel assemblies within containment.

A Note has been added to the SR Table to clarify that Table 3.3.6-1 determines which SRs apply to which Containment Ventilation Isolation Functions.

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.

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 92 days on a STAGGERED TEST BASIS. The Surveillance interval is ~~acceptable based on instrument reliability and industry operating experience.~~ justified in Reference 4. P

(continued)

The SR is modified by a Note stating that the Surveillance is only applicable to the master relays of the ESFAS Instrumentation.

BASES

SURVEILLANCE REQUIREMENTS (continued)

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 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~~ 92 days on a STAGGERED TEST BASIS. The Surveillance interval is ~~acceptable based on instrument reliability and industry operating experience.~~ justified in Reference 4. TP

The SR is modified by a Note stating that the Surveillance is only applicable to the master relays of the ESFAS Instrumentation.

SR 3.3.6.4

A CFT is performed every 92 days on each required channel to ensure the entire channel will perform the intended Function. The Frequency is based on the staff recommendation for increasing the availability of radiation monitors according to NUREG-1366 (Ref. 2). This test verifies the capability of the instrumentation to provide the containment purge and vacuum/pressure relief system isolation.

To ensure complete end-to-end testing through the CVI mode selector switch, the CFT is only valid for the position in use during the test.

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 24 months. The Frequency is acceptable based on instrument reliability and industry operating experience.

SR 3.3.6.6

There is no manual actuation of CVI except via SI, phase A or B. This testing is performed as part of SR 3.3.2.8

SR 3.3.6.7

A CHANNEL CALIBRATION is performed every 24 months, or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.6.7 (continued)

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.

SR 3.3.6.8

This SR assures that the individual channel RESPONSE TIMES for the CVI from Containment Purge Radiation Gaseous and Particulate function are less than or equal to the maximum values assumed in the accident analysis. Response Time testing acceptance criteria are included in ECG 38.2. Individual component response times are not modeled in the analyses. The analyses model the overall or elapsed time, from the point at which the parameter 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., valves in full closed position). The response time may be measured by a series of overlapping tests such that the entire response time is measured.

RESPONSE TIME tests are conducted on an 24 month STAGGERED TEST BASIS. Each verification shall include at least one train such that both trains are verified at least once per 48 months and one channel per function such that all channels are tested at least once every N times 24 months where N is the total number of redundant channels in a specific ESFAS function. Testing of the final actuation devices, which make up the bulk of the response time, is included in the testing of each train. Therefore, staggered testing results in response time verification of one train of devices every 24 months. The 24 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.

REFERENCES

1. 10 CFR 100.11.
2. NUREG-1366, December 1992.
3. DCM No. T-16, Containment Function.
4. WCAP-15376-P-A, Revision 1, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," March 2003.

SUMMARY OF REGULATORY COMMITMENTS

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The following table identifies those actions committed to by PG&E in this document. Any other statements in this submittal are provided for information purposes and are not considered to be commitments. Please direct questions regarding these commitments to Mr. Stan Ketelsen, Regulatory Services Manager, (805) 545-4720.

COMMITMENT	Due Date/Event
The proposed changes to the DCPP Technical Specifications will be implemented within 90 days of NRC approval.	Within 90 days of NRC approval.
Activities that degrade the availability of the auxiliary feedwater system, RCS pressure relief system (pressurizer PORVs and safety valves), AMSAC, or turbine trip should not be scheduled when a logic train or RTB train is inoperable for maintenance.	Administrative controls in place within 90 days of NRC approval.
One complete ECCS train that can be actuated automatically must be maintained when a logic train is inoperable for maintenance.	Administrative controls in place within 90 days of NRC approval.
Activities that cause master relays or slave relays in the available train to be unavailable and activities that cause analog channels to be unavailable should not be scheduled when a logic train or RTB train is inoperable for maintenance.	Administrative controls in place within 90 days of NRC approval.
Activities on electrical systems (e.g., AC and DC power) and cooling systems (e.g., essential service water and component cooling water (CCW only for an inoperable logic train)) that support the systems or functions listed above should not be scheduled when a logic train or RTB train is inoperable for maintenance. That is, one complete train of a function that supports a complete train of a function noted above must be available.	Administrative controls in place within 90 days of NRC approval.

TOPICAL REPORT APPLICABILITY DETERMINATION
(NON-PROPRIETARY)

Safety Evaluation Condition 1 for WCAP-14333-P-A and WCAP-15376-P-A

In order to address Safety Evaluation (SE) Condition 1 for both WCAPs, Westinghouse issued implementation guidelines for licensees to confirm the analyses are applicable to their plant.

Confirm Applicability

[

] a,c

Containment Failure Assessment

[

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Safety Evaluation Condition 4 for WCAP-15376-P-A

[

] a,c

Table 1
WCAP-14333-P-A Implementation Guidelines: Applicability of the Analysis General Parameters

Parameter	WCAP-14333 Analysis Assumptions	Plant-Specific Parameter
Logic Cabinet Type [1]	SSPS or Relay	SSPS
Component Test Intervals [2]		
• Analog channels	3 months	3 months
• Logic cabinets (SSPS)	2 months	2 months
• Logic cabinets (Relay)	1 month	NA
• Master Relays (SSPS)	2 months	2 months
• Master Relays (Relay)	1 month	NA
• Slave Relays	3 months	3 months [11]
• Reactor trip breakers	2 months	2 months
Analog Channel Calibrations [3]		
• Done at-power	Yes	No [12]
• Interval	18 months	> 18 months [12]
Typical At-Power Maintenance Intervals [4]		
• Analog channels	24 months	> 24 months [13]
• Logic cabinets (SSPS)	18 months	> 18 months [13]
• Logic cabinets (Relay)	12 months	NA
• Master relays (SSPS)	Infrequent [5]	Infrequent
• Master relays (Relay)	Infrequent [5]	NA
• Slave relays	Infrequent [5]	Infrequent
• Reactor trip breakers	12 months	> 12 months [13]

Table 1
WCAP-14333-P-A Implementation Guidelines: Applicability of the Analysis General Parameters

AMSAC [6]	Credited for AFW pump start	Credited for AFW pump start
Total Transient Event Frequency [7]	3.6/year	1.72/year
ATWS Contribution to CDF (current PRA model) [8]	8.4E-06/year	7.43E-08/year
Total CDF from Internal Events (current PRA model) [9]	5.8E-05/year	1.04E-05/year
Total CDF from Internal Events (IPE) [10]	Not Applicable	7.9E-05/year [14]

Notes for Table 1

1. Both types of logic cabinets, SSPS and Relay, are included in WCAP-14333 and the analysis is applicable to DCPP.
2. Since our test intervals are equal to or greater than those used in WCAP-14333, the analysis is applicable to DCPP.
3. Since channel calibrations are not typically done at-power (see Note 12) and the calibration interval is equal to or greater than that used in WCAP-14333, the analysis is applicable to DCPP.
4. Since DCPP's maintenance intervals are equal to or greater than those used in WCAP-14333, the analysis is applicable to DCPP.
5. Only corrective maintenance is done on the master and slave relays. The typical maintenance interval is relatively long; that is, experience has shown they do not typically completely fail. Failure of these relays usually involves failure of individual contacts. Since "infrequent" master and slave relay failures are the norm, the WCAP-14333 analysis is applicable to DCPP.
6. Since AMSAC will initiate AFW pump start, the WCAP-14333 analysis is applicable to DCPP.
7. This entry includes the total frequency for initiators requiring a reactor trip signal to be generated for event mitigation to assess the importance of ATWS events to CDF. Events initiated by a reactor trip are not included. Since the plant specific value is less than the WCAP-14333 value, this analysis is applicable to DCPP.
8. This entry indicates the ATWS contribution to core damage frequency (from at-power, internal events) to determine if the ATWS event is a large contributor to CDF.
9. This entry indicates the total CDF from internal events (including internal flooding) for the most recent PRA model update for comparison to the NRC's risk-informed CDF acceptance guidelines.
10. This entry indicates the total CDF from internal events from the IPE model submitted to the NRC in response to Generic Letter 88-20. See Note 14 for differences between the most recent PRA model update and that included in the GL 88-20 response.
11. Most slave relays are tested on a refueling basis. Some are tested quarterly.

12. Analog channel calibrations are typically performed during refueling outages, but there is no requirement for that and they are sometimes performed at power.
13. Note 4 states that WCAP-14333 applies if the maintenance intervals are greater than or equal to those assumed. Per Westinghouse, the note only applies to maintenance at power. Since DCPP typically performs preventive maintenance on the analog channels, logic trains, and RTBs while shutdown, the analysis is applicable to DCPP.
14. Note 10 requires reconciliation between the current CDF and that reported to NRC in response to GL 88-20. The major contributors to the difference between the current CDF and that reported in the IPE is due to the following plant and PRA model changes:
    - Sixth diesel generator was added to the model.
    - Installed high temperature qualified "O" rings in the RCP seals.
    - Added the backup Class 1 battery chargers.
    - Added backup water supply to the AFW pumps.
    - Increased the level of detail in the ASW modeling.
    - Added the third PORV.
    - Added BOP systems (feedwater, condensate, circulating water/service water, non-vital power, and completed modeling of instrument air).
    - Reduced initiating event frequencies based on more recent industry data (NUREG-5750).
    - Added AMSAC to the model as a diverse start of AFW pumps and turbine trip.

Table 2
WCAP-15376 Implementation Guidelines: Applicability of the Analysis General Parameters

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Table 3
WCAP-14333 and WCAP-15376 Implementation Guidelines:
Applicability of Analysis Reactor Trip Actuation Signals

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Table 4
WCAP-14333 and WCAP-15376 Implementation Guidelines:
Applicability of Analysis Engineered Safety Features Actuation Signals

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Table 5
WCAP-15376 Implementation Guidelines:
Applicability of the Analysis Human Reliability Analysis

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