Virginia Electric and Power Company
Richmond, Virginia 23261

May 30, 2001

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

Serial No. 01-319
NL&OS/GSS/ETS R0
Docket Nos. 50-338
50-339
License Nos. NPF-4
NPF-7

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNITS 1 AND 2
TECHNICAL SPECIFICATION BASES CHANGE
RTS AND ESF ACTION STATEMENT AND SURVEILLANCE FREQUENCY CHANGES

Virginia Electric and Power Company (Dominion) has revised the Bases for the current Technical Specifications 3/4.3.1 and 3/4.3.2, "Reactor Trip System (RTS) and Engineered Safety Feature Actuation System (ESFAS) Instrumentation." Changes include a statement in the Bases section to identify that a plant-specific risk assessment was performed to support the increased allowed outage and maintenance times and decreased surveillance frequencies for the instrumentation that was not specifically evaluated in Westinghouse WCAP-10271, Supplements 1 and 2 and WCAP-14333. This plant-specific risk assessment affirms and supports the current Technical Specification allowed outage time, bypass time and surveillance intervals approved by Amendments 221 for Unit 1 and 202 for Unit 2 issued by your staff on March 9, 2000.

These changes will also be incorporated into the ITS license amendment request, which was submitted to the NRC on December 11, 2000. Additionally, we included Functional Unit 7, "Automatic Switchover to Containment Sump" into ITS 3.3.2, Table 3.3.2-1 for consistency with NUREG-1431. This functional unit was also not evaluated in the generic WCAP risk analysis. Therefore, our plant-specific risk assessment also included this functional unit. We have included typed ITS pages for each functional unit included in our plant-specific risk assessment for your information. The ITS Bases changes will be provided to the NRC as part of the responses to requests for additional information during the NRC review of our ITS submittal.

We are providing these Technical Specification Bases changes for your information. The Technical Specifications Bases changes have been reviewed and approved by the Station Nuclear Safety and Operating Committee and the Management Safety Review

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Committee. It has been determined that these changes do not involve an unreviewed safety question as defined in 10 CFR 50.59. A discussion and the Technical Specifications Bases changes are provided in Attachments 1 through 3.

If you have any further questions, please contact us.

Very truly yours,

L. N. Hartz
Vice President - Nuclear Engineering and Services

Attachments:
- Attachment 1, Discussion of Bases Changes
- Attachment 2, Current Technical Specifications Bases Changes
- Attachment 3, ITS Technical Specifications Bases Changes

Commitments made in this letter:

1. None

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COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Leslie N. Hartz, who is Vice President - Nuclear Engineering & Services, of Virginia Electric and Power Company. She has affirmed before me that she is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of her knowledge and belief.

Acknowledged before me this 30th day of May, 2001.

My Commission Expires: 3-31-04.

Maggie McClure
Notary Public

(SEAL)

Attachment 1

Discussion of Bases Change

Virginia Electric and Power Company
(Dominion)
North Anna Power Station Units 1 and 2

Discussion of Change

Introduction

By letter dated May 6, 1999 (Serial No. 99-261), Virginia Electric and Power Company (Dominion) proposed changes to the North Anna Technical Specifications. These proposed changes were approved and incorporated into the North Anna Technical Specifications by amendments 221 and 202 dated March 9, 2000 for Units 1 and 2, respectively. Specifically, changes were requested to the allowed outage time, bypass time, surveillance interval and maintenance time for the analog instrumentation and logic channels for the Reactor Trip System (RTS) and Engineered Safeguards Features Actuation System (ESFAS). These changes will be referred to as the WCAP changes in the submittal.

The bases for the changes were generic risk-informed evaluations performed by Westinghouse Electric Company for the RTS and ESFAS analog instrumentation and logic channels as documented in WCAP-10271, Supplements 1 and 2, and WCAP-14333P. These WCAPs were subsequently approved and SERs issued by the NRC. However, as part of the North Anna proposed changes, Dominion erroneously applied the generic risk evaluation to two analog instruments that were not specifically addressed in the generic evaluation performed by Westinghouse. Consequently, from the time of this discovery until completion of our specific risk evaluation, we administratively controlled the allowed outage times (AOT), bypass times, and surveillance time intervals (STI) to the previous licensed times consistent with Administrative Letter 98-10. A discussion of our plant-specific risk assessment, which was completed to support the current Technical Specification allowed outage time, bypass time and surveillance interval for the two analog instruments, has been incorporated into Bases Sections 3/4.3.1 and 3/4.3.2 for the RTS and ESFAS. In addition, as part of our upgrade to Improved Technical Specifications (ITS) we have also added a functional unit, "Automatic Switchover to Containment Sump," which was not covered by the generic WCAP risk analysis. Our plant-specific risk assessment also included this new functional unit and, as such, we have included the revised basis pages for our ITS submittal.

Current Licensing Basis

The current surveillance interval for RTS and ESFAS instrumentation analog channels is quarterly. The current allowed outage times, completion times, and action statements are consistent with the WCAP changes and the associated NRC SER. Specifically, 72 hours are provided to place an inoperable instrument channel in the trip or bypass condition, 12 hours are provided for testing of an instrument channel with a channel in bypass, and 24 hours are provided for maintenance of a logic channel. These requirements were established in amendments 221 and 202, dated March 9, 2000.

Current Design Basis

The RTS provides the means for controlling the reactor in response to various measured primary and secondary variables associated with power, temperature, pressure, level, flow, and the availability of electric power. If the combination of monitored variables indicates an approach to unsafe conditions, the RTS will initiate the appropriate protective action, e.g., load runback, prevention of rod withdrawal, or reactor trip (opening the reactor trip breakers).

The RTS and ESFAS are designed in accordance with IEEE-279, "Standard, Nuclear Power Plant Trip Systems," August 1968. The RTS is designed so that the most probable modes of failure in each channel result in a partial or full reactor trip signal. The RTS design combines redundant sensors and channel independence with coincident trip philosophy so that a safe and reliable system is provided in which a single failure will not defeat the channel function, cause a spurious trip, or violate reactor protection criteria.

RTS channels are designed with sufficient redundancy for individual channel calibration and testing to be performed during power operation without degrading reactor protection. Specific testing exceptions are provided to not require testing of backup channels, such as reactor coolant pump breakers. Testing will not cause a trip unless a trip condition exists concurrently in another channel. During such operation the active parts of the system continue to meet the single-failure criterion, since the channel under test is either tripped or makes use of superimposed test signals that do not negate the process signal. "One-out-of-two" systems are permitted to violate the single-failure criterion during channel bypass provided that acceptable reliability of operation can be demonstrated and the bypass time interval is short.

Discussion of Change

A plant-specific risk assessment was completed to permit returning the allowed outage time, surveillance interval and maintenance time for RTS Functional Unit 20, "Reactor Coolant Pump Breaker Position Trip Above P-7" and ESFAS Loss of Power Functional Units 7.a, "4.16 Kv Emergency Bus Undervoltage (Loss of Voltage)," and 7.b, "4.16 Kv Emergency Bus Undervoltage (Grid Degraded Voltage)" to the approved licensing basis. In addition, the risk assessment included an assessment of the Functional Unit 7, "Automatic Switchover to Containment Sump," which has been included in our Improved Technical Specifications. The plant-specific risk evaluation assessed the change in CDF and the incremental change in core damage probability as a result of the WCAP changes for the additional functions. The following provides a discussion of the plant-specific risk assessment performed for the functional units identified above.

The CDF sensitivity for the functions in question was developed in the same manner as the original WCAP-10271 and WCAP-14333P analyses. The EDG start-failure impact was estimated by fault tree modeling. The Automatic Containment Switchover function is similar to that of some of the WCAP channels and was estimated by comparison to similar functions. The RCP breaker position trip is unique and was estimated by combining representative failure probabilities for each of the instrument channel components. Once the channel failure impacts were quantified, these numbers were converted to a CDF impact by looking at the associated CDF sensitivity from the North Anna PRA model for the same function or a higher level function.

The reactor trip function on RCP breaker position is not included in the North Anna PRA model. However, its unavailability was estimated both above and below Permissive P-8. Both random and common cause failures were evaluated. The magnitude of the signal unavailability remains very small in every case. When these unavailabilities are integrated to estimate the overall increase in risk sensitivity, the net impact is still negligible. This latter point is made by noting that the logic trains of reactor protection are individually NOT risk-significant. For example, the RCP breaker position trip is only one of many diverse RTS input signals that ensure a proper reactor trip. Therefore, the impact of a loss of one of the input signals is proportionally much lower than the overall loss of function.

The EDG is modeled in the North Anna PRA so the CDF impact of the proposed changes may be quantified more accurately. Both the undervoltage and the degraded voltage (UV/DV) contributions to the EDG start-failure probability were evaluated. The net impact of the proposed TS change is an increase in the EDG start-failure probability of approximately 0.8 percent. This failure mode is only marginally risk significant in a zero-maintenance configuration. The increase per EDG in start-failure probability yields a Core CDF increase of approximately 0.01%.

The Automatic Switchover to Containment Sump occurs when the Refueling Water Storage Tank level drops to the established setpoint. This function is not presently included in the North Anna Technical Specifications, but it will be included when North Anna converts to the Improved Technical Specifications. Thus, the Automatic Switchover to Containment Sump is being addressed in this submittal. Its failure probability is estimated to increase by approximately 1.3E-4 as a result of the proposed changes. However, the Automatic Switchover to Containment Sump function has a negligible risk impact (<0.05%) in the zero-maintenance configuration. This minor increase in its unavailability also results in a negligible CDF impact.

The reactor trip function on RCP breaker position, the EDG auto-start on UV/DV, and the Automatic Switchover to Containment Sump function are minor contributors to overall core damage frequency. Hence, the proposed WCAP changes for these functions have a negligible impact on CDF. This impact on CDF is easily bounded by the generic and plant-specific analyses previously reviewed and approved by the NRC for similar trip functions.

The numbers cited in this assessment are summarized in the attached Table. These numbers account for both the extended AOTs and decreased STIs.

RG 1.177 outlines specific principles for the implementation of risk-informed Technical Specifications changes. These principles, and a discussion of the Dominion program for meeting their requirements, are as follows:

1. *The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.* The only proposed changes are to the AOTs, bypass times and STIs for the channels addressed in this package. Their basis is explicitly addressed above.

2. *The proposed change is consistent with the defense-in-depth philosophy. Defense-in-depth is fully maintained.* The redundancy and diversity of the RTS and ESFAS are not affected. All components and test requirements remain in place. The only proposed changes are in AOTs, STIs, and bypass times.

3. *The proposed changes maintain sufficient safety margins.* The safety margins remain unaffected. The proposed changes are specifically shown to be negligible in every case. A margin of safety is not approached for CDF or any other parameter.

4. *When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.* The impact of the proposed changes are specifically shown to be several hundredths of a percent of CDF. NUREG-0800 identifies an incremental conditional core damage probability (ICCDP) of 5E-7 as a threshold for identifying AOT changes as small. The changes proposed in this package are several orders of magnitude less than this limit.

5. *The impact of the proposed change should be monitored using performance measurement strategies.* The existing 10 CFR 50.65 (Maintenance Rule) program monitors the availability and reliability of risk-significant plant components including those in the RPS and ESFAS. Performance is held to stringent criteria and corrective measures are implemented when any component fails to meet its criterion.

Specific Changes

Current Technical Specifications

The following has been added to the third paragraph of Bases Section 3/4-3.1 and 3/4-3.2 (Basis Page 3/4.3-1) to address the plant specific probabilistic risk assessment:

For those functional units (RTS Functional Unit 20, "Reactor Coolant Pump Breaker Position Trip Above P-7" and ESFAS Loss of Power Functional Units 7.a, "4.16 Kv Emergency Bus Undervoltage (Loss of Voltage)," and 7.b, "4.16 Kv Emergency Bus Undervoltage (Grid Degraded Voltage)" not included in the generic Westinghouse probabilistic risk analyses discussed above, a plant-specific risk assessment was performed. This risk assessment demonstrates that the effect on core damage frequency and incremental change in core damage probability is negligible for the relaxations associated with the additional functional units.

Improved Technical Specifications

The following has been added to the Bases Section 3.3.1, 3.3.2 and 3.3.5 to address the plant specific probabilistic risk assessment:

3.3.1 – Actions L.1 and L.2, which include Reactor Coolant Pump Breaker Position (Basis Page 3.3.1-43)

With the exception of RCP Breaker Position, the 72 hours allowed to place the channel in the tripped condition is justified in Reference 7. **A plant-specific risk assessment, consistent with Reference 7, was performed to justify the 72 hour completion time for RCP Breaker Position.**

With the exception of RCP Breaker Position, the 12 hour time limit is justified in Reference 7. **A plant-specific risk assessment, consistent with Reference 7, was performed to justify the 12 hour time limit for RCP Breaker Position.**

3.3.2 – Action I, RWST Level-Low Low Coincident with Safety Injection (Bases pages 3.3.2-38 and 3.3.2-39)

The 72 hour Completion Time is justified in **a plant-specific risk assessment, consistent with** Reference 8.

The total of 72 hours to reach Mode 3 and 12 hours for a second channel to be bypassed is acceptable based on the results of **a plant-specific risk assessment, consistent with** Reference 8.

3.3.5 – Action A.1 for Loss Of Power EDG Start Instrumentation (Basis page B3.3.5-4)

The 72 hour Completion Time is justified in **a plant-specific risk assessment, consistent with** Reference 4.

The 12 hour bypass time is justified in **a plant-specific risk assessment, consistent with** Reference 4.

Safety Significance

In WCAP-14333P, the WOG evaluated the impact of the additional relaxation of allowed outage times, completion times and action statements on core damage frequency. The associated change in core damage frequency is an increase of 3.1 percent for those plants with two out of three logic schemes that have not implemented the proposed changes evaluated in WCAP-10271 and its supplements. The NRC Staff considered this resultant core damage frequency (CDF) increase to be small compared to the range of uncertainty in the core damage frequency analyses, and therefore found it acceptable.

The NRC performed an independent, generic evaluation of the impact on CDF and large early release frequency (LERF). The results of the staff's review indicate that the increase in core damage frequency is small (approximately 3.2%) and the large early release fraction would increase by only 4 percent for 2 out of 3 logic schemes that have not implemented the proposed changes evaluated in WCAPs.

Dominion's original evaluation used the current North Anna PRA model to establish an overall change in the CDF of approximately one percent in a plant-specific analysis. This result is consistent with the original WCAP–10271 and WCAP-14333P analyses. The combined impact of the supplemental changes addressed by this package is only approximately a hundredth of a percent, two orders of magnitude less than the original May 9, 1999 submittal result. The impact on the incremental core damage probability is several orders of magnitude smaller. These numbers for the individual channels are also consistent with the channel-specific analyses of the WCAPs. Thus, the generic WCAP analyses remains bounding and Dominion's plant-specific analysis remains unaffected by the additional functions. The overall impact on North Anna CDF due to implementation of WCAP-10271 and WCAP-14333P relaxations in allowed outage time, bypass time, and surveillance interval for RTS and ESFAS instrumentation is minor.

Table 1 – Risk Evaluation Results

FUNCTION	Nominal Unavailability	Potential Unavailability Change *	Percent Change	Risk Reduction Worth	Risk Achievement Worth	CDF Impact ***	Comment
EDG auto-start	3.98-02	3.00E-04	0.8%	1.007	1.45	0.01%	(2 EDG's per unit)
Automatic Switchover To Containment Sump Suction	5.9E-04	1.3E-04	22%	1	1.00	0.00%	Below roundoff error
Reactor Trip on RCP breaker position **	1.80E-05 2.05E-05	0.21E-05 1.26E-05	11.7% 61.5%				Above P-8 Below P-8
Reactor Trip logic trains	4.40E-04			1	1.00	0.00%	Below roundoff error

* These numbers are based upon the assumption that the full AOT will be used on a regular basis every year. In fact, these functions are rarely removed from service during power operation.

**With operator backup.

***The baseline CDF at North Anna is approximately 3.3E-5/yr.

Attachment 2

Current Technical Specifications Bases Changes

Virginia Electric and Power Company
(Dominion)
North Anna Power Station Units 1 and 2

Unit 1

3/4.3.1 and 3/4.3.2 REACTOR TRIP SYSTEM (RTS) AND ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

The OPERABILITY of the RTS and ESFAS instrumentation and interlocks ensure that 1) the associated ESF action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof reaches its setpoint, 2) the specified coincidence logic and sufficient redundancy are maintained to permit a channel to be out of service for testing or maintenance consistent with maintaining an appropriate level of reliability of the RTS and ESFAS instrumentation and interlocks, and 3) sufficient system functional capability is available for protective and ESF purposes from diverse parameters.

The OPERABILITY of these systems is required to provide the overall reliability, redundancy and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the accident analyses.

The surveillance requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability. Specific surveillance intervals and surveillance and maintenance outage times have been determined in accordance with WCAP-10271, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Trip Instrumentation System," and supplements to that report, WCAP-10271 Supplement 2 "Evaluation of Surveillance Frequencies and Out of Service Times for the Engineered Safety Features Actuation System," and supplements to that report, and WCAP-14333P, "Probabilistic Risk Analysis of the RPS and ESF Test Times and Completion Times," as approved by the NRC and documented in SERs dated February 21, 1985, February 22, 1989, the SSER dated April 30, 1990 for WCAP-10271 and July 15, 1998 for the WCAP-14333P. For those functional units (RTS Functional Unit 20, "Reactor Coolant Pump Breaker Position Trip Above P-7" and ESFAS Loss of Power Functional Units 7.a, "4.16 Kv Emergency Bus Undervoltage (Loss of Voltage)," and 7.b, "4.16 Kv Emergency Bus Undervoltage (Grid Degraded Voltage)" not included in the generic Westinghouse probabilistic risk analyses discussed above, a plant specific risk assessment was performed. This risk assessment demonstrates that the effect on core damage frequency and incremental change in core damage probability is negligible for the relaxations associated with the additional functional units.

Surveillance testing of instrument channels is routinely performed with the channel in the tripped condition. With the exception of the Power Range Neutron Flux instrument channels, only those instrument channels with hardware permanently installed that permits bypassing without lifting a lead or installing a jumper are routinely tested in the bypass condition. However, an inoperable channel may be bypassed by lifting a lead or installing a jumper to permit surveillance testing of another instrument channel of the same functional unit.

3/4.3 INSTRUMENTATION

BASES

The measurement of response time at the specified frequencies provides assurance that the protective and ESF action function associated with each channel is completed within the time limit assumed in the accident analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable.

Response time may be demonstrated by any series of sequential, overlapping or total channel test measurements provided that such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either 1) in place, onsite or offsite test measurements or 2) utilizing replacement sensors with certified response times.

3/4.3.3 MONITORING INSTRUMENTATION

3/4.3.3.1 RADIATION MONITORING INSTRUMENTATION

The OPERABILITY of the radiation monitoring channels ensures that 1) the radiation levels are continually measured in the areas served by the individual channels and 2) the alarm or automatic action is initiated when the radiation level trip setpoint is exceeded.

Unit 2

3/4.3.1 and 3/4.3.2 REACTOR TRIP SYSTEM (RTS) AND ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

The OPERABILITY of the RTS and ESFAS instrumentation and interlocks ensure that 1) the associated ESF action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof exceeds its setpoint, 2) the specified coincidence logic and sufficient redundancy are maintained to permit a channel to be out of service for testing or maintenance consistent with maintaining an appropriate level of reliability of the RTS and ESFAS instrumentation and interlocks, and 3) sufficient system functional capability is available for protective and ESF purposes from diverse parameters.

The OPERABILITY of these systems is required to provide the overall reliability, redundancy and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the accident analyses.

The surveillance requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability. Specific surveillance intervals and surveillance and maintenance outage times have been determined in accordance with WCAP-10271, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Trip Instrumentation System," and supplements to that report, WCAP-10271 Supplement 2 "Evaluation of Surveillance Frequencies and Out of Service Times for the Engineered Safety Features Actuation System," and supplements to that report, and WCAP-14333P, "Probabilistic Risk Analysis of the RPS and ESF Test Times and Completion Times," as approved by the NRC and documented in SERs dated February 21, 1985, February 22, 1989, the SSER dated April 30, 1990 for WCAP-10271 and July 15, 1998 for the WCAP-14333P. For those functional units (RTS Functional Unit 20, "Reactor Coolant Pump Breaker Position Trip Above P-7" and ESFAS Loss of Power Functional Units 7.a, "4.16 Kv Emergency Bus Undervoltage (Loss of Voltage)," and 7.b, "4.16 Kv Emergency Bus Undervoltage (Grid Degraded Voltage)" not included in the generic Westinghouse probabilistic risk analyses discussed above, a plant specific risk assessment was performed. This risk assessment demonstrates that the effect on core damage frequency and incremental change in core damage probability is negligible for the relaxations associated with the additional functional units.

Surveillance testing of instrument channels is routinely performed with the channel in the tripped condition. With the exception of the Power Range Neutron Flux instrument channels, only those instrument channels with hardware permanently installed that permits bypassing without lifting a lead or installing a jumper are routinely tested in the bypass condition. However, an inoperable channel may be bypassed by lifting a lead or installing a jumper to permit surveillance testing of another instrument channel of the same functional unit.

The measurement of response time at the specified frequencies provides assurance that the protective and ESF action function associated with each channel is completed within the time limit assumed in the accident analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable.

Response time may be demonstrated by any series of sequential, overlapping or total channel test measurements provided that such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either 1) in place, onsite or offsite test measurements or 2) utilizing replacement sensors with certified response times.

3/4.3.3 MONITORING INSTRUMENTATION

3/4.3.3.1 RADIATION MONITORING INSTRUMENTATION

The OPERABILITY of the radiation monitoring channels ensures that 1) the radiation levels are continually measured in the areas served by the individual channels and 2) the alarm or automatic action is initiated when the radiation level trip setpoint is exceeded.

Attachment 3

ITS Technical Specifications Bases Changes

Virginia Electric and Power Company
(Dominion)
North Anna Power Station Units 1 and 2

BASES

ACTIONS

L.1 and L.2 (continued)

- Undervoltage RCPs; and
- Underfrequency RCPs.

With one channel inoperable, the inoperable channel must be placed in the tripped condition within 72 hours. For the Pressurizer Pressure—Low, Pressurizer Water Level—High, Undervoltage RCPs, and Underfrequency RCPs trip Functions, placing the channel in the tripped condition when above the P-7 setpoint results in a partial trip condition requiring only one additional channel to initiate a reactor trip. For the Reactor Coolant Flow—Low and RCP Breaker Position (Two Loops) trip Functions, placing the channel in the tripped condition results in a partial trip condition requiring only one additional channel in the same loop to initiate a reactor trip. For the latter two trip Functions, two tripped channels in two RCS loops are required to initiate a reactor trip when below the P-8 setpoint and above the P-7 setpoint. 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. There is insufficient heat production to generate DNB conditions below the P-7 setpoint. With the exception of RCP Breaker Position, the 72 hours allowed to place the channel in the tripped condition is justified in Reference 7. A plant-specific risk assessment, consistent with Reference 7, was performed to justify the 72 hour Completion Time for RCP Breaker Position. 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 redundant capability provided by the remaining redundant OPERABLE channel, and the low probability of occurrence of an event during this period that may require the protection afforded by the Functions associated with Condition K.

The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypassed condition for up to 12 hours while performing routine surveillance testing of the other channels. With the exception of RCP Breaker Position, the 12 hour time limit is justified in Reference 7. A plant-specific risk assessment, consistent with Reference 7, was performed to justify the 12 hour time limit for RCP Breaker Position.

BASES

ACTIONS

H.1 and H.2 (continued)

challenging unit systems. In MODE 3, the unit does not have any analyzed transients or conditions that require the explicit use of the protection function noted above. The allowance of 48 hours to return the train to an OPERABLE status is justified in Reference 8.

I.1, I.2.1, and I.2.2

Condition I applies to:

- RWST Level–Low Low Coincident with Safety Injection.

RWST Level–Low Low Coincident With SI provides actuation of switchover to the containment sump. Note that this Function requires the bistables to energize to perform their required action. The failure of up to two channels will not prevent the operation of this Function. However, placing a failed channel in the tripped condition could result in a premature switchover to the sump, prior to the injection of the minimum volume from the RWST. Placing the inoperable channel in bypass results in a two-out-of-three logic configuration, which satisfies the requirement to allow another failure without disabling actuation of the switchover when required.

Restoring the channel to OPERABLE status or placing the inoperable channel in the bypass condition within 72 hours is sufficient to ensure that the Function remains OPERABLE, and minimizes the time that the Function may be in a partial trip condition (assuming the inoperable channel has failed high). The 72 hour Completion Time is justified in a plant-specific risk assessment, consistent with Reference 8. If the channel cannot be returned to OPERABLE status or placed in the bypass condition within 72 hours, the unit must be brought to MODE 3 within the following 6 hours and MODE 5 within the next 30 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 5, the unit does not have any analyzed transients or conditions that require the explicit use of the protection functions noted above.

The Required Actions are modified by a Note that allows placing a second channel in the bypass condition for up to 12 hours for surveillance testing. The total of 78 hours to

(continued)

BASES

ACTIONS

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

reach MODE 3 and 12 hours for a second channel to be bypassed is acceptable based on the results of a plant-specific risk assessment, consistent with Reference 8.

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

Condition J applies to the P-11 and P-12 interlocks.

With one or more channels inoperable, the operator must verify that the interlock is in the required state for the existing unit condition. The verification that the interlocks are in proper state may be performed via the Control Room permissive status lights. This action manually accomplishes the function of the interlock. Determination must be made within 1 hour. The 1 hour Completion Time is equal to the time allowed by LCO 3.0.3 to initiate shutdown actions in the event of a complete loss of ESFAS function. If the interlock is not in the required state (or placed in the required state) for the existing unit condition, the unit must be placed in MODE 3 within the next 6 hours and MODE 4 within the following 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. Placing the unit in MODE 4 removes all requirements for OPERABILITY of these interlocks.

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.

BASES

ACTIONS

In the event a channel's trip setpoint is found nonconservative with respect to the Allowable Value, or the channel is found inoperable, then the function that channel provides must be declared inoperable and the LCO Condition entered for the particular protection function affected.

Because the required channels are specified on a per bus basis, the Condition may be entered separately for each bus as appropriate.

A Note has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed in the LCO and for each emergency bus. The Completion Time(s) of the inoperable channel(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function for the associated emergency bus.

A.1

Condition A applies to the LOP EDG start Function with one loss of voltage or degraded voltage channel per bus inoperable.

If one channel is inoperable, Required Action A.1 requires that channel to be placed in trip within 72 hours. The 72 hour Completion Time is justified in a plant-specific risk assessment, consistent with Reference 4. With a channel in trip, the LOP EDG start instrumentation channels are configured to provide a one-out-of-two logic to initiate a trip of the incoming offsite power.

A Note is added to allow bypassing an inoperable channel for up to 12 hours for surveillance testing of other channels. The 12 hour bypass time is justified in a plant-specific risk assessment, consistent with Reference 4. This allowance is made where bypassing the channel does not cause an actuation and where normally, excluding required testing, two other channels are monitoring that parameter.

The specified Completion Time and time allowed for bypassing one channel are reasonable considering the Function remains fully OPERABLE on every bus and the low probability of an event occurring during these intervals.