VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

September 23, 2005

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

Serial No. 05-330A
NL&OS/ETS R1
Docket Nos. 50-338/339
License Nos. NPF4/7

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNITS 1 AND 2
ADDITIONAL PROPOSED CHANGES FOR
PROPOSED TECHNICAL SPECIFICATION CHANGES
REVISED FREQUENCY FOR TADOT OF P-4 INTERLOCK

In a letter dated March 1, 2005 (Serial No. 05-111), Virginia Electric and Power Company (Dominion) requested amendments, in the form of changes to the Technical Specifications to Facility Operating License Numbers NPF-4 and NPF-7 for North Anna Power Station Units 1 and 2, respectively. The proposed changes were requested to revise the frequency for the Trip Actuating Device Operational Test (TADOT) and change the modes of applicability for the P-4 Interlock Function consistent with TSTF 444, Rev. 1. In a August 30, 2005 telephone conference call with the NRC staff to discuss the proposed changes, the NRC questioned: 1) the adequacy of our proposed required actions for an inoperable train of the P-4, and 2) whether existing Technical Specification requirements were sufficient if P-4 was applicable in Mode 4.

Since the call, Dominion has further evaluated the operability requirements of the P-4 interlock to address the NRC concerns. If the P-4 interlock function was required in Mode 4, then the required action would be to take the plant to Mode 5. However, based on our review of the generic analyses performed to support the Westinghouse Shutdown LOCA procedure (ARG-2), we have determined that the P-4 interlock function is not required to be operable in Mode 4 for North Anna to support the manual safety injection function. The operator can take appropriate actions, independent of the operability of P-4, to reduce and/or terminate safety injection as required. Therefore, Dominion is revising the initial proposed Technical Specifications changes, noted above, to eliminate the Mode 4 applicability for the P-4 interlock function.

The revised marked-up page and proposed typed page (TS 3.3.2-11) are included in the attachment to this letter. Please replace the pages from the original March 1, 2005 submittal with the attached pages to complete your review of the proposed amendment.

We have evaluated the original proposed Technical Specification changes with respect to the additional change provided herein and have determined that the proposed changes remain bounded by the No Significant Hazards Consideration Determination and the Environmental Assessment previously provided in our March 1, 2005 submittal.

If you have any further questions or require additional information, please contact Mr. Thomas Shaub at (804) 273-2763.

Very truly yours,

William R. Matthews
Senior Vice President – Nuclear Operations

Attachment

Commitments made in this letter: 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 William R. Matthews, who is Senior Vice President - Nuclear Operations of Virginia Electric and Power Company. He has affirmed before me that he 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 his knowledge and belief.

Acknowledged before me this 23rd day of September, 2005.

My Commission Expires: May 31, 2006.

Vicki L. Hull
Notary Public

(SEAL)

Serial No. 05-330A

Virginia Electric and Power Company
North Anna Power Station Units 1 and 2
Proposed Technical Specifications Changes For
P-4 Interlock Function

Response to Request for Additional Information
Revised Marked-up and Proposed TS pages

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

Table 3.3.2-1 (page 4 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
6. Auxiliary Feedwater					
a. Automatic Actuation Logic and Actuation Relays	1, 2, 3	2 trains	G	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA
b. SG Water Level–Low Low	1, 2, 3	3 per SG	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 17%
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
d. Loss of Offsite Power	1, 2, 3	1 per bus, 2 buses	F	SR 3.3.2.6 SR 3.3.2.8 SR 3.3.2.9	≥ 2184 V
e. Trip of all Main Feedwater Pumps	1, 2	2 per pump	H	SR 3.3.2.7 SR 3.3.2.9	NA
7. Automatic Switchover to Containment Sump					
a. Automatic Actuation Logic and Actuation Relays	1, 2, 3, 4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA
b. Refueling Water Storage Tank (RWST) Level–Low Low	1, 2, 3, 4	4	I	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 18.4% and ≤ 20.4%
Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
8. ESFAS Interlocks					
a. Reactor Trip, P-4	1, 2, 3	1 per train, 2 trains	F	SR 3.3.2.~~10~~ 7	NA
b. Pressurizer Pressure, P-11	1, 2, 3	3	J	SR 3.3.2.1 SR 3.3.2.8	≤ 2010 psig
c. T_{avg}–Low Low, P-12	1, 2, 3	1 per loop	J	SR 3.3.2.1 SR 3.3.2.8	≥ 542°F and ≤ 545°F

BASES

APPLICABLE SAFETY ANALYSES, LCO, AND APPLICABILITY

8. Engineered Safety Feature Actuation System Interlocks (continued)

interlock Functions back up manual actions to ensure bypassable functions are in operation under the conditions assumed in the safety analyses.

a. Engineered Safety Feature Actuation System Interlocks–Reactor Trip, P-4

The P-4 interlock is enabled when a reactor trip breaker (RTB) and its associated bypass breaker are open. Once the P-4 interlock is enabled, automatic SI reinitiation is blocked after a 60 second time delay. This Function allows operators to take manual control of SI systems after the initial phase of injection is complete. Once SI is blocked, automatic actuation of SI cannot occur until the RTBs have been manually closed, resetting the P-4 interlock. The functions of the P-4 interlock are:

- Trip the main turbine;
- Isolate MFW Regulating Valves with coincident low T_{avg};
- Prevent automatic reactuation of SI after a manual reset of SI;
- Prevent opening of the MFW regulating valves if they were closed on SI or SG Water Level–High High; and
- Reset the high steam line flow to the nominal setpoint.

INSERT 1

delete

Each of the above Functions is interlocked with P-4 to avert or reduce the continued cooldown of the RCS following a reactor trip. An excessive cooldown of the RCS following a reactor trip could cause an insertion of positive reactivity with a subsequent increase in generated power. To avoid such a situation, the noted Functions have been interlocked with P-4 as part of the design of the unit control and protection system.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, AND APPLICABILITY

8. Engineered Safety Feature Actuation System Interlocks (continued)

a. Engineered Safety Feature Actuation System Interlocks–Reactor Trip, P-4 (continued)

None of the noted Functions serves a mitigation function in the unit licensing basis safety analyses. Only the turbine trip Function is explicitly assumed since it is an immediate consequence of the reactor trip Function. Neither turbine trip, nor any of the other Functions associated with the reactor trip signal, is required to show that the unit licensing basis safety analysis acceptance criteria are not exceeded.

INSERT 1

The RTB position switches that provide input to the P-4 interlock only function to energize or de-energize or open or close contacts. Therefore, this Function has no adjustable trip setpoint with which to associate an Allowable Value.

This Function must be OPERABLE in MODES 1, 2, and 3 when the reactor may be critical or approaching criticality. This Function does not have to be OPERABLE in MODE 4, 5, or 6 because the main turbine and the MFW System are not required to be in operation.

b. Engineered Safety Feature Actuation System Interlocks–Pressurizer Pressure, P-11

The P-11 interlock permits a normal unit cooldown and depressurization without actuation of SI. With two-out-of-three pressurizer pressure channels (discussed previously) less than the P-11 setpoint, the operator can manually block the Pressurizer Pressure–Low Low SI signal. Additionally, the P-11 signal blocks the automatic opening of the pressurizer power operated relief valves (PORVs).

With two-out-of-three pressurizer pressure channels above the P-11 setpoint, the Pressurizer Pressure–Low Low SI signal is automatically enabled. The operator can also enable this function by use of the respective manual reset switches. The automatic opening capability for the pressurizer PORVs is

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Function	Purpose	Required MODES
Isolate MFW Regulating Valves with coincident low Tavg	Feedwater isolation	1, 2
Trip the main turbine	Prevents excessive cooldown, thereby Condition II event does not propagate to Condition III event	1, 2
Prevent automatic reactuation of SI after a manual reset of SI	Allows alignment of ECCS for recirculation mode, prevents subsequent inadvertent alignment to injection mode by auto SI	1, 2, 3
Reset high steam flow setpoint to no-load value (1) SI-High Steam flow in Two Steam Lines Coincident With Steam Line Pressure – Low (2) SI – High Steam Flow in Two Steam Lines Coincident With Tavg – Low Low (3) Steam Line isolation – High Steam Flow in Two Steam Lines Coincident With Steam Line Pressure - Low (4) Steam Line Isolation – High Steam Flow in Two Steam Lines Coincident With Tavg – Low Low	Ensures setpoint is reset to low/zero power reference value following plant trip, regardless of turbine first stage pressure indication	1, 2, 3 (function not required if MSTVs are closed and deactivated)
Prevent opening of the MFW Regulating Valves if they were closed on SI or SG Water Level – High High	Seal-in feedwater isolation to prevent inadvertent feeding of de-pressurized SG	1, 2, 3

Each of the above functions is interlocked with P-4 to avert or reduce the continued cooldown of the RCS following a reactor trip. An excessive cooldown of the RCS following a reactor trip could cause an insertion of positive reactivity with a subsequent increase in core power. Addition of feedwater to a steam generator associated with a steamline or feedline break could result in excessive containment building pressure. To avoid such a situation, the noted Functions have been interlocked with P-4 as part of the design of the unit control and protection system.

The turbine trip Function is explicitly assumed in the non-LOCA analysis since it is an immediate consequence of the reactor trip Function. Block of the auto SI signals is required to support long-term ECCS operation in the post-LOCA recirculation mode.

The RTB position switches that provide input to the P-4 interlock only function to energize or de-energize or open or close contacts. Therefore, this Function has no adjustable trip setpoints with which to associate an Allowable Value.

This Function must be OPERABLE in MODES 1, 2, and 3, as noted above, when the reactor may be critical or approaching criticality or support of the auto SI block function is required. This Function does not have to be OPERABLE in MODES 4, 5, or 6 because the main turbine and the MFW System are not required to be in operation.

Table 3.3.2-1 (page 4 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
6. Auxiliary Feedwater					
a. Automatic Actuation Logic and Actuation Relays	1, 2, 3	2 trains	G	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA
b. SG Water Level–Low Low	1, 2, 3	3 per SG	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 17%
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
d. Loss of Offsite Power	1, 2, 3	1 per bus, 2 buses	F	SR 3.3.2.6 SR 3.3.2.8 SR 3.3.2.9	≥ 2184 V
e. Trip of all Main Feedwater Pumps	1, 2	2 per pump	H	SR 3.3.2.7 SR 3.3.2.9	NA
7. Automatic Switchover to Containment Sump					
a. Automatic Actuation Logic and Actuation Relays	1, 2, 3, 4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA
b. Refueling Water Storage Tank (RWST) Level–Low Low	1, 2, 3, 4	4	I	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 18.4% and ≤ 20.4%
Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
8. ESFAS Interlocks					
a. Reactor Trip, P-4	1, 2, 3	1 per train, 2 trains	F	SR 3.3.2.7	NA
b. Pressurizer Pressure, P-11	1, 2, 3	3	J	SR 3.3.2.1 SR 3.3.2.8	≤ 2010 psig
c. T_{avg}–Low Low, P-12	1, 2, 3	1 per loop	J	SR 3.3.2.1 SR 3.3.2.8	≥ 542°F and ≤ 545°F

BASES

APPLICABLE SAFETY ANALYSES, LCO, AND APPLICABILITY

8. Engineered Safety Feature Actuation System Interlocks (continued)

interlock Functions back up manual actions to ensure bypassable functions are in operation under the conditions assumed in the safety analyses.

a. Engineered Safety Feature Actuation System Interlocks–Reactor Trip, P-4

The P-4 interlock is enabled when a reactor trip breaker (RTB) and its associated bypass breaker are open. Once the P-4 interlock is enabled, automatic SI reinitiation is blocked after a 60 second time delay. This Function allows operators to take manual control of SI systems after the initial phase of injection is complete. Once SI is blocked, automatic actuation of SI cannot occur until the RTBs have been manually closed, resetting the P-4 interlock. The functions of the P-4 interlock are:

Function	Purpose	Required MODES
Isolate MFW regulating valves with coincident low T_{avg}	Feedwater isolation	1, 2
Trip the main turbine	Prevents excessive cooldown, thereby Condition II event does not propagate to Condition III event	1, 2

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, AND APPLICABILITY

8. Engineered Safety Feature Actuation System Interlocks (continued)

a. Engineered Safety Feature Actuation System Interlocks-Reactor Trip, P-4 (continued)

Function	Purpose	Required MODES
Prevent automatic reactuation of SI after a manual reset of SI	Allows alignment of ECCS for recirculation mode, prevents subsequent inadvertent alignment to injection mode by auto SI	1, 2, 3

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BASES

APPLICABLE SAFETY ANALYSES, LCO, AND APPLICABILITY

8. Engineered Safety Feature Actuation System Interlocks (continued)

a. Engineered Safety Feature Actuation System Interlocks-Reactor Trip, P-4 (continued)

Function	Purpose	Required MODES
Reset high steam flow setpoint to no-load value 1. SI-High Steam flow in Two Steam Lines Coincident With Steam Line Pressure - Low 2. SI - High Steam Flow in Two Steam Lines Coincident With T_{avg} - Low Low 3. Steam Line isolation - High Steam Flow in Two Steam Lines Coincident With Steam Line Pressure - Low 4. Steam Line Isolation - High Steam Flow in Two Steam Lines Coincident With T_{avg} - Low Low	Ensures setpoint is reset to low/zero power reference value following plant trip, regardless of turbine first stage pressure indication	1, 2, 3 (function not required if MSTVs are closed and deactivated)

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BASES

APPLICABLE SAFETY ANALYSES, LCO, AND APPLICABILITY

8. Engineered Safety Feature Actuation System Interlocks (continued)

a. Engineered Safety Feature Actuation System Interlocks-Reactor Trip, P-4 (continued)

Function	Purpose	Required MODES
Prevent opening of the MFW regulating valves if they were closed on SI or SG Water Level - High High	Seal-in feedwater isolation to prevent inadvertent feeding of depressurized SG	1, 2, 3

Each of the above Functions is interlocked with P-4 to avert or reduce the continued cooldown of the RCS following a reactor trip. An excessive cooldown of the RCS following a reactor trip could cause an insertion of positive reactivity with a subsequent increase in core power. Addition of feedwater to a steam generator associated with a steamline or feedline break could result in excessive containment building pressure. To avoid such a situation, the noted Functions have been interlocked with P-4 as part of the design of the unit control and protection system.

The turbine trip Function is explicitly assumed in the non-LOCA analysis since it is an immediate consequence of the reactor trip Function. Block of the auto SI signals is required to support long-term ECCS operation in the post-LOCA recirculation mode.

The RTB position switches that provide input to the P-4 interlock only function to energize or de-energize or open or close contacts. Therefore, this Function has no adjustable trip setpoint with which to associate an Allowable Value.

This Function must be OPERABLE in MODES 1, 2, and 3, as noted above, when the reactor may be critical or approaching criticality or support of the

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BASES

APPLICABLE SAFETY ANALYSES, LCO, AND APPLICABILITY

8. Engineered Safety Feature Actuation System Interlocks (continued)

a. Engineered Safety Feature Actuation System Interlocks–Reactor Trip, P-4 (continued)

auto SI block function is required. This Function does not have to be OPERABLE in MODES 4, 5, or 6 because the main turbine and the MFW System are not required to be in operation.

b. Engineered Safety Feature Actuation System Interlocks–Pressurizer Pressure, P-11

The P-11 interlock permits a normal unit cooldown and depressurization without actuation of SI. With two-out-of-three pressurizer pressure channels (discussed previously) less than the P-11 setpoint, the operator can manually block the Pressurizer Pressure–Low Low SI signal. Additionally, the P-11 signal blocks the automatic opening of the pressurizer power operated relief valves (PORVs).

With two-out-of-three pressurizer pressure channels above the P-11 setpoint, the Pressurizer Pressure–Low Low SI signal is automatically enabled. The operator can also enable this function by use of the respective manual reset switches. The automatic opening capability for the pressurizer PORVs is reinstated above the P-11 setpoint. The ECCS accumulator isolation valves will receive an automatic open signal when pressurizer pressure exceeds the P-11 setpoint. The Allowable Value reflects only steady state instrument uncertainties. This Function must be OPERABLE in MODES 1, 2, and 3 to allow an orderly cooldown and depressurization of the unit without the actuation of SI. This Function does not have to be OPERABLE in MODE 4, 5, or 6 because system pressure must already be below the P-11 setpoint for the requirements of the heatup and cooldown curves to be met.

c. Engineered Safety Feature Actuation System Interlocks–T_{avg}–Low Low, P-12

On increasing reactor coolant temperature, the P-12 interlock reinstates SI on High Steam Flow Coincident

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