ATTACHMENT 2

PROPOSED TECHNICAL SPECIFICATIONS CHANGES

NORTH ANNA UNITS 1 AND 2

VIRGINIA ELECTRIC AND POWER COMPANY

ISOLATED LOOP

LIMITING CONDITION FOR OPERATION

3.4.1.4 The boron concentration of an isolated loop shall be maintained greater than or equal to the boron concentration of the operating loops, unless the loop has been drained for maintenance.

APPLICABILITY: MODES 3, 4 and 5.

ACTION:

With the requirements of the above specification not satisfied, do not open the isolated loop's stop valves; either increase the boron concentration of the isolated loop to within the limits within 4 hours or borate the unisolated portion of the RCS to a SHUTDOWN MARGIN equivalent to at least 1.77% $\Delta k/k$ at 200°F within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.4.1.4 The boron concentration of an isolated, undrained loop shall be determined to be greater than or equal to the boron concentration of the operating loops at least once per 24 hours and within 30 minutes prior to opening either the hot leg or cold leg stop valves of an isolated loop.

ISOLATED LOOP STARTUP - FILLED

LIMITING CONDITION FOR OPERATION

3.4.1.5 A reactor coolant loop cold leg stop valve on an undrained loop shall remain closed with A.C. power removed and its breaker locked open* unless:

a. The isolated loop has been operating on a recirculation flow of greater than or equal to 125 gpm for at least 90 minutes and the temperature at the cold leg of the isolated loop is within 20°F of the highest cold leg temperature of the operating loops, and

b. The reactor is subcritical by at least 1.77 percent Δk/k, or

c. The loop is being backfilled in accordance with Specification 3.4.1.6.

APPLICABILITY: MODES 3, 4, 5 and 6.

ACTION:

With the requirements of the above specification not satisfied, suspend startup of the isolated loop. A.C. power shall be removed from the valve and the breaker locked open within 2 hours.

SURVEILLANCE REQUIREMENTS

4.4.1.5.1 The isolated loop cold leg temperature shall be determined to be within 20°F of the highest cold leg temperature of the operating loops within 30 minutes prior to opening the cold leg stop valve.

4.4.1.5.2 The reactor shall be determined to be subcritical by at least 1.77 percent Δk/k within 30 minutes prior to opening the cold leg stop valve.

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* A cold leg stop valve in a reactor coolant loop may be closed for up to two hours for valve maintenance or testing. If the stop valve is not opened within two hours, A.C. power shall be removed from the valve and the breaker locked open.

ISOLATED LOOP STARTUP - DRAINED

LIMITING CONDITION FOR OPERATION

3.4.1.6 Whenever a reactor coolant loop is isolated and drained, A.C. power shall be removed from the loop stop valves and the associated breakers locked open.

a. The valves may be energized and/or opened to fill the loop from the active volume of the Reactor Coolant System, once the following conditions are met:

   1. The isolated loop shall be drained.

   2. Pressurizer water volume shall be at least 450 cubic feet.

   3. A source range neutron flux monitor shall be operable.

b. During backfilling of the isolated loop,

   1. Pressurizer water volume shall be maintained at or above 450 cubic feet.

   2. The source range neutron flux count rate shall be no more than a factor of 2 above the initial count rate.

   3. The hot and cold leg stop valves shall be fully opened within 2 hours after the backfill of the isolated loop has been completed.

APPLICABILITY: MODES 5 and 6.

ACTION:

a. If the isolated loop is not drained then it must be fully drained before initiating backfilling.

b. If the pressurizer water volume is not maintained at 450 cubic feet or greater, then the loop stop valves on the loop being backfilled shall be closed, A.C. power shall be removed from the loop stop valves and the breakers locked open.

c. If the loop stop valves are not fully open within 2 hours after the loop is filled, then the loop shall be isolated and drained or apply Specification 3.4.1.4 and 3.4.1.5.

d. If the source range count rate increases by a factor of two over the initial count rate, then the hot and cold leg loop stop valves shall be reclosed, power removed from the breakers and the breakers locked open. No attempt shall be made to reopen the loop stop valves until the reason for the count rate increase has been determined.

SURVEILLANCE REQUIREMENTS

4.4.1.6.1 The isolated loop shall be verified drained within 2 hours prior to opening the loop stop valve for backfilling the loop from the RCS.

4.4.1.6.2 The pressurizer water volume shall be verified to be ≥ 450 cubic feet at least once per 15 minutes during filling of the isolated loop.

4.4.1.6.3 The source range neutron flux monitor shall be demonstrated OPERABLE by performance of:

a. A CHANNEL FUNCTIONAL TEST within 8 hours prior to commencing isolated loop backfill, and

b. A CHANNEL CHECK at least once per 15 minutes during backfilling of an isolated loop.

within 20°F of the operating loops. Making the reactor subcritical prior to loop startup prevents any power spike which could result from this cool water induced reactivity transient.

An initially isolated and drained reactor coolant loop may be returned to service by partially opening the loop stop valves and filling the loop in a controlled manner from the Reactor Coolant System. Prior to partially opening the loop stop valves, the following measures are required to ensure no sudden positive reactivity addition or loss of Reactor Coolant System inventory occurs:

a) The isolated loop is verified to be drained, thus preventing the dilution of Reactor Coolant System boron concentration by liquid present in the loop.

b) Pressurizer level is verified to be greater than or equal to 450 cubic feet to ensure Reactor Coolant System inventory is maintained for decay heat removal. Pressurizer level is required to be maintained greater than or equal to 450 cubic feet during the backfill evolution. In addition, the backfill evolution is limited to one isolated loop at a time.

c) A source range neutron flux monitor channel is required to be monitored to detect any unexpected positive reactivity addition due to an inadvertent mismatch between RCS and blended makeup concentration.

After an initially drained loop is filled from the Reactor Coolant System by partially opening the loop stop valves, the loop is no longer considered to be isolated. Thus, the requirements for returning an isolated and filled loop to service are not applicable and the loop stop valves may be fully opened without restriction within two hours of completing the loop backfill evolution.

The initial pressurizer level requirement has been established such that, even if the stop valves are suddenly opened on all three loops with all of them drained, one of them under vacuum and no makeup available, the Reactor Coolant System water level will not drop below the middle of the reactor vessel nozzles. This ensures continued adequate suction conditions for the residual heat removal pumps.

The safety analysis assumes a minimum shutdown margin as an initial condition. Violation of the limiting conditions for loop stop valve operation could result in the shutdown margin being reduced to less than that assumed in the safety analysis. In addition, violation of the limiting conditions could cause a loss of shutdown decay heat removal.

3/4.4.2 AND 3/4.4.3 SAFETY AND RELIEF VALVES

The pressurizer code safety valves operate to prevent the RCS from being pressurized above its Safety Limit of 2735 psig. Each safety valve is designed to relieve 380,000 lbs per hour of saturated steam at the valve set point. The relief capacity of a single safety valve is adequate to relieve any overpressure condition which could occur during hot shutdown. In the event that no safety valves are OPERABLE, an operating RHR loop, connected to the RCS, or the power operated relief valves (PORVs) will provide overpressure relief capability and will prevent RCS overpressurization.

During operation, all pressurizer code safety valves must be OPERABLE to prevent the RCS from being pressurized above its safety limit of 2735 psig. The combined relief capacity of all of these valves is greater than the maximum surge rate resulting from a complete loss of load assuming no reactor trip until the first Reactor Protective System trip setpoint is reached (i.e., no credit is taken for a direct reactor trip on the loss of load) and also assuming no operation of the power operated relief valves or steam dump valves.

Demonstration of the safety valves' lift settings will occur only during shutdown and will be performed in accordance with the provisions of Section XI of the ASME Boiler and Pressure Vessel Code.

The safety valve tolerance requirement for Modes 1-3 is expressed as an average value. That is, the as-found error (expressed as a positive or negative percentage) of each tested safety valve is summed and divided by the number of valves tested. This average as-found value is compared to the acceptable range of + 2% to - 3%. In addition, no single valve is allowed to be outside of ± 3%.

An average tolerance of + 2% / - 3% was confirmed to be adequate for Modes 1-3 accident analyses. For the overpressure events, the analyses considered several combinations of valve tolerance with the arithmetic average of the three valves' tolerance equal to + 2% (with no valve outside of ± 3%). The case of a + 2% tolerance on each of the three valves provided the most limiting results. The - 3% tolerance is limiting for the DNB acceptance criterion.

The power operated relief valves and steam bubble function to relieve RCS pressure during all design transients up to and including the design step load decrease with steam dump. Operation of the power operated relief valves minimizes the undesirable opening of the spring-loaded pressurizer code safety valves. Each PORV has a remotely operated block valve to provide a positive shutoff capability should a relief valve become inoperable.

ISOLATED LOOP

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APPLICABILITY: MODES 3, 4 and 5.

ACTION:

With the requirements of the above specification not satisfied, do not open the isolated loop's stop valves; either increase the boron concentration of the isolated loop to within the limits within 4 hours or borate the unisolated portion of the RCS to a SHUTDOWN MARGIN equivalent to at least 1.77% $\Delta k/k$ at 200°F within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.4.1.4 The boron concentration of an isolated, undrained loop shall be determined to be greater than or equal to the boron concentration of the operating loops at least once per 24 hours and within 30 minutes prior to opening either the hot leg or cold leg stop valves of an isolated loop.

ISOLATED LOOP STARTUP - FILLED

LIMITING CONDITION FOR OPERATION

3.4.1.5 A reactor coolant loop cold leg stop valve on an undrained loop shall remain closed with A.C. power removed and its breaker locked open* unless:

a. The isolated loop has been operating on a recirculation flow greater than or equal to 125 gpm for at least 90 minutes and the temperature at the cold leg of the isolated loop is within 20°F of the highest cold leg temperature of the operating loops, and

b. The reactor is subcritical by at least 1.77 percent Δk/k, or

c. The loop is being backfilled in accordance with Specification 3.4.1.6.

APPLICABILITY: MODES 3, 4, 5 and 6.

ACTION:

With the requirements of the above specification not satisfied, suspend startup of the isolated loop. A.C. power shall be removed from the valve and the breaker locked open within 2 hours.

SURVEILLANCE REQUIREMENTS

4.4.1.5.1 The isolated loop cold leg temperature shall be determined to be within 20°F of the highest cold leg temperature of the operating loops within 30 minutes prior to opening the cold leg stop valve.

4.4.1.5.2 The reactor shall be determined to be subcritical by at least 1.77 percent Δk/k within 30 minutes prior to opening the cold leg stop valve.

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* A cold leg stop valve in a reactor coolant loop may be closed for up to two hours for valve maintenance or testing. If the stop valve is not opened within two hours, A.C. power shall be removed from the valve and the breaker locked open.

LIMITING CONDITION FOR OPERATION

3.4.1.6 Whenever a reactor coolant loop is isolated and drained, A.C. power shall be removed from the loop stop valves and the associated breakers locked open.

a. The valves may be energized and/or opened to fill the loop from the active volume of the Reactor Coolant System, once the following conditions are met:

   1. The isolated loop shall be drained.

   2. Pressurizer water volume shall be at least 450 cubic feet.

   3. A source range neutron flux monitor shall be operable.

b. During backfilling of the isolated loop,

   1. Pressurizer water volume shall be maintained at or above 450 cubic feet.

   2. The source range neutron flux count rate shall be no more than a factor of 2 above the initial count rate.

   3. The hot and cold leg stop valves shall be fully opened within 2 hours after the backfill of the isolated loop has been completed.

APPLICABILITY: MODES 5 and 6.

ACTION:

a. If the isolated loop is not drained then it must be fully drained before initiating backfilling.

b. If the pressurizer water volume is not maintained at 450 cubic feet or greater, then the loop stop valves on the loop being backfilled shall be closed, A.C. power shall be removed from the loop stop valves and the breakers locked open.

c. If the loop stop valves are not fully open within 2 hours after the loop is filled, then the loop shall be isolated and drained or apply Specification 3.4.1.4 and 3.4.1.5.

d. If the source range count rate increases by a factor of two over the initial count rate, then the hot and cold leg loop stop valves shall be reclosed, power removed from the breakers and the breakers locked open. No attempt shall be made to reopen the loop stop valves until the reason for the count rate increase has been determined.

SURVEILLANCE REQUIREMENTS

4.4.1.6.1 The isolated loop shall be verified drained within 2 hours prior to opening the loop stop valve for backfilling the loop from the RCS.

4.4.1.6.2 The pressurizer water volume shall be verified to be ≥ 450 cubic feet at least once per 15 minutes during filling of the isolated loop.

4.4.1.6.3 The source range neutron flux monitor shall be demonstrated OPERABLE by performance of:

a. A CHANNEL FUNCTIONAL TEST within 8 hours prior to commencing isolated loop backfill, and

b. A CHANNEL CHECK at least once per 15 minutes during backfilling of an isolated loop.

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a) The isolated loop is verified to be drained, thus preventing the dilution of Reactor Coolant System boron concentration by liquid present in the loop.

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After an initially drained loop is filled from the Reactor Coolant System by partially opening the loop stop valves, the loop is no longer considered to be isolated. Thus, the requirements for returning an isolated and filled loop to service are not applicable and the loop stop valves may be fully opened without restriction within two hours of completing the loop backfill evolution.

The initial pressurizer level requirement has been established such that, even if the stop valves are suddenly opened on all three loops with all of them drained, one of them under vacuum and no makeup available, the Reactor Coolant System water level will not drop below the middle of the reactor vessel nozzles. This ensures continued adequate suction conditions for the residual heat removal pumps.

The safety analysis assumes a minimum shutdown margin as an initial condition. Violation of the limiting conditions for loop stop valve operation could result in the shutdown margin being reduced to less than that assumed in the safety analysis. In addition, violation of the limiting conditions could cause a loss of shutdown decay heat removal.

ATTACHMENT 3

SIGNIFICANT HAZARDS CONSIDERATION

VIRGINIA ELECTRIC AND POWER COMPANY

10 CFR 50.92 SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

Virginia Electric and Power Company has reviewed the proposed changes against the criteria of 10 CFR 50.92 and has concluded that the changes as proposed do not pose a significant hazards consideration. Specifically, operation of the North Anna Power Station is accordance with the proposed changes will not:

1. Involve a significant increase in the probability of occurrence or consequences of an accident previously evaluated. The probability of occurrence of a positive reactivity addition accident is not being increased by the proposed Technical Specification change. The proposed restrictions on boron concentration and mixing, reactor coolant system inventory and reactivity and count rate monitoring provide a level of protection against reactivity addition accidents which is equivalent to that currently in place.

2. Create the possibility of a new or different kind of accident from any accident previously evaluated. The proposed change does not introduce any new or unique failure modes or accident precursors. Eliminating the operability requirements for the loop stop valve interlocks does not create any new or different kind of accident scenario. Loop startup accidents in the various modes of operation have been analyzed. Operation of the loop stop valves will not change. New requirements have been imposed for the case of backfilling a drained loop from the reactor coolant system to ensure that core cooling and reactivity control are preserved throughout the backfill evolution.

3. Involve a significant reduction in any margin of safety. The new Technical Specification loop isolation and startup requirements for temperature, boron concentration, and shutdown margin fulfill the function of the loop stop valve interlocks. Therefore, the margin of safety as defined in any Technical Specification bases is not reduced.