

Attachment 1

Proposed Technical Specification Change
North Anna Unit 1

Virginia Electric and Power Company

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PDR ADGCK 05000338
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PLANT SYSTEMS

AUXILIARY FEEDWATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.1.2 At least three independent steam generator auxiliary feedwater pumps and associated flow paths shall be OPERABLE with:

- a. Two motor driven auxiliary feedwater pumps, each capable of being powered from separate emergency busses, and
- b. One steam turbine driven auxiliary feedwater pump capable of being powered from an OPERABLE steam supply system.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

- a. With one auxiliary feedwater pump inoperable, restore the required auxiliary feedwater pumps to an OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the following 6 hours.
- b. With two auxiliary feedwater pumps inoperable be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.
- c. With three auxiliary feedwater pumps inoperable, immediately initiate corrective action to restore at least one auxiliary feedwater pump to OPERABLE status as soon as possible.

SURVEILLANCE REQUIREMENTS (Continued)

4.7.1.2 In addition to the requirements of Specification 4.0.5, each auxiliary feedwater pump shall be demonstrated OPERABLE:

- a. At least once per 31 days by:
 1. Verifying that each pump develops adequate discharge pressure and flow. The acceptance criterion shall be consistent with Specification 4.0.5. The provisions of Specification 4.0.4 are not applicable to steam turbine driven pump testing.

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SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.
- b. At least once per 18 months during shutdown by:
1. Verifying that each automatic valve in the flow path actuates to its correct position on an auxiliary feedwater actuation test signal.
 2. Verifying that each auxiliary feedwater pump starts automatically upon receipt of an auxiliary feedwater actuation test signal.
- c. The auxiliary feedwater system shall be demonstrated OPERABLE prior to entry into MODE 3 following each COLD SHUTDOWN by performing a flow test to verify the normal flow path from the emergency condensate storage tank through each auxiliary feedwater pump to its associated steam generator.

Attachment 2

Proposed Technical Specification Change
North Anna Unit 2

Virginia Electric and Power Company

PLANT SYSTEMS

AUXILIARY FEEDWATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.1.2 At least three independent steam generator auxiliary feedwater pumps and associated flow paths shall be OPERABLE with:

- a. Two motor driven auxiliary feedwater pumps, each capable of being powered from separate emergency busses, and
- b. One steam turbine driven auxiliary feedwater pump capable of being powered from an OPERABLE steam supply system.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

- a. With one auxiliary feedwater pump inoperable, restore the required auxiliary feedwater pumps to an OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the following 6 hours.
- b. With two auxiliary feedwater pumps inoperable be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.
- c. With three auxiliary feedwater pumps inoperable, immediately initiate corrective action to restore at least one auxiliary feedwater pump to OPERABLE status as soon as possible.

SURVEILLANCE REQUIREMENTS (Continued)

4.7.1.2 In addition to the requirements of Specification 4.0.5, each auxiliary feedwater pump shall be demonstrated OPERABLE:

- a. At least once per 31 days by:
 1. Verifying that each pump develops adequate discharge pressure and flow. The acceptance criterion shall be consistent with Specification 4.0.5. The provisions of Specification 4.0.4 are not applicable to steam turbine driven pump testing.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.
- b. At least once per 18 months during shutdown by:
1. Verifying that each automatic valve in the flow path actuates to its correct position on an auxiliary feedwater actuation test signal.
 2. Verifying that each auxiliary feedwater pump starts automatically upon receipt of an auxiliary feedwater actuation test signal.
- c. The auxiliary feedwater system shall be demonstrated OPERABLE prior to entry into MODE 3 following each COLD SHUTDOWN by performing a flow test to verify the normal flow path from the emergency condensate storage tank through each auxiliary feedwater pump to its associated steam generator.

Attachment 3

Discussion of Proposed Change
North Anna Units 1 and 2

Virginia Electric and Power Company

Discussion of Proposed Changes

This change involves the acceptance criteria for the monthly auxiliary feedwater (AFW) pump test required by Specification 4.7.1.2.a. The current specification requires a specific discharge pressure and flow. The change deletes those specific values and will allow the acceptable discharge pressure and flow rates to be established and periodically reevaluated through our procedures for ASME Section XI testing.

A previous proposed Technical Specification change was submitted to the NRC December 28, 1989, which would have deleted the monthly testing requirement, and only required a quarterly test in accordance with ASME Section XI. This new proposed change will replace the previously submitted request.

The auxiliary feedwater system is used to cool the steam generators, and therefore the reactor, when normal feedwater is lost or after a reactor trip. The AFW system includes two motor driven and one turbine driven pump. Specification 3.7.1.2 requires all three pumps to be OPERABLE in modes 1, 2 or 3 and Specification 4.7.1.2 requires monthly testing on minimum flow recirculation.

The pumps are equipped with minimum flow recirculation lines which include orifices just large enough to ensure that the pumps will not overheat when run with all other flow paths closed. This minimum flow was the basis for the original specification.

NRC Bulletin 88-04 "Safety Related Pump Loss" identified concerns with hydraulic instability in pumps operating near their shut off heads. In our August 8, 1988 reply to that bulletin we committed to disassembling and inspecting the auxiliary feedwater pumps and to minimize operation at low flow. The inspections indicated that some degradation had occurred which was not revealed by the high pressure-low flow testing. The pumps have since been overhauled. The new benchmark performance data for ASME Section XI testing was gathered by pumping at full flow to the steam generators. A new full flow recirculation line was added during the latest Unit 2 refueling outage and is being installed during the current Unit 1 outage to permit full flow testing at power without affecting the steam generators or normal feedwater regulation. Our quarterly Section XI testing is now done at flow conditions near the pump's best efficiency point. This test provides early warning of degradation and is similar to conditions when the pump is performing its safety function. If the monthly test could be done under similar conditions, safety would be enhanced because there would be less pump wear and more effective testing.

The specific values for pressure and flow will no longer be in the Technical Specifications. Rather, they can be reevaluated as required by the Code. Removal of the pressure and flow figures is consistent with the NRC's policy on Technical Specification improvements. Because the specific values are not in the Merits Technical Specifications, no Merits change is attached.

Attachment 4

**10 CFR 50.92 Evaluation
North Anna Units 1 and 2**

Virginia Electric and Power Company

Basis for No Significant Hazards Determination

Virginia Electric and Power Company proposes to revise the acceptance criteria for the monthly testing of auxiliary feedwater pumps required by Technical Specification 4.7.1.2.a. This specification requires a flow test to ensure that the pumps develop a specified discharge pressure and flow. The pumps are also tested quarterly as required by Section XI of the ASME code.

The pumps are equipped with minimum flow recirculation lines which include orifices just large enough to ensure that the pumps will not overheat when run with all other flow paths closed. This minimum flow was the basis for the original specification. Because the resulting discharge pressure is near the pump's shut-off head, the pump is degraded by this operation. This test is also relatively insensitive to degradation.

The quarterly test is done at flow conditions near the pump's best efficiency point. The acceptance criteria is based on performance measured after the pumps were overhauled. This test does not hurt the pump, it provides early warning of degradation and is similar to conditions when the pump is performing its safety function. If the monthly test could be done under similar conditions, safety would be enhanced because there would be less pump wear and more effective testing.

The proposed change deletes the specific pressure and flow requirements for the monthly test and requires that the acceptance criteria be consistent with the monthly test. The specific criteria need not be in the Technical Specifications because the ASME code requires revising the criteria whenever the pump is overhauled. Deleting these parameters is also consistent with the Commission's policy on Technical Specification improvement.

The proposed change does not involve an increase in the probability or consequence of an accident previously evaluated. The auxiliary feedwater system provides water to the steam generators when normal feedwater is unavailable. The consequence of a pump failure will not be changed by this proposed change. The probability of failure will be reduced because there will be less pump wear and testing will be more effective.

The proposed change will not create the possibility of a new or different kind of accident. This is not an actual hardware change and does not alter any conditions or assumptions used in accident analysis or Technical Specification basis.

The proposed change does not involve a reduction in a margin of safety. The change will not affect the quantity or pressure of auxiliary feedwater provided.

Therefore, based on the above considerations, it has been determined that this change does not involve a significant hazards consideration as defined by 10 CFR 50.92.