VIRGINIA ELECTRIC AND POWER COMPANY

RICHMOND, VIRGINIA 23261

April 8, 1993

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

Serial No. 93-210
NL&P/MAE/DCH: 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**
**PROPOSED TECHNICAL SPECIFICATIONS CHANGES**
**CONTAINMENT RECIRCULATION SPRAY SYSTEM**

Pursuant to 10 CFR 50.90, the Virginia Electric and Power Company requests amendments, in the form of changes to the Technical Specifications, to Facility Operating License Nos. NPF-4 and NPF-7 for North Anna Power Station Units 1 and 2, respectively. The proposed changes will separate the containment recirculation spray subsystems into two containment recirculation spray trains.

A discussion of the proposed Technical Specifications changes is provided in Attachment 1. The proposed Technical Specifications changes are provided in Attachment 2. It has been determined that the proposed Technical Specifications changes do not involve an unreviewed safety question as defined in 10 CFR 50.59 or a significant hazards consideration as defined in 10 CFR 50.92. The basis for our determination that these changes do not involve a significant hazards consideration is provided in Attachment 3. The proposed Technical Specifications changes have been reviewed and approved by the Station Nuclear Safety and Operating Committee and the Management Safety Review Committee.

Should you have any questions or require additional information, please contact us.

Very truly yours,

W. L. Stewart
Senior Vice President - Nuclear

Attachments

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150022

cc: U.S. Nuclear Regulatory Commission
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Mr. M. S. Lesser
NRC Senior Resident Inspector
North Anna Power Station

Commissioner
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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 W. L. Stewart who is Senior Vice President - Nuclear, of Virginia Electric and Power Company. He is duly authorized to execute and file the foregoing document in behalf of that Company, and the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 8TH day of April, 1993.

My Commission Expires: May 31, 1994.

Vicki L. Hull
Notary Public

(SEAL)

Attachment 1

Discussion of Changes

# DISCUSSION OF CHANGES

## Introduction

Technical Specification (TS) 3.6.2.2 describes the various subsystems that are included in the Containment Recirculation Spray System and the actions required if these subsystems become inoperable. The Containment Recirculation Spray System is used to reduce and maintain containment pressure below atmospheric pressure following a high energy line break and provide for long term post accident cooling. The current description of the Containment Recirculation Spray System in Technical Specifications describes the system as consisting of six separate and independent subsystems and a casing cooling tank. If more than one of the six subsystems becomes inoperable, then within one hour the inoperable subsystems are required to be restored or the unit must be shut down. This could result in unnecessary plant shutdowns even though the units are still within the design parameters of the accident analysis bases.

The current Technical Specifications do not accurately reflect the terminology used in the Updated Final Safety Analysis Report (UFSAR) or the Containment Recirculation Spray System Design Basis Document (SDBD). The Technical Specification changes will separate the containment recirculation spray subsystems into two containment recirculation spray trains. Each train will consist of one inside recirculation spray subsystem and one outside recirculation spray subsystem (which includes its associated casing cooling pump). This change will more accurately describe the Containment Recirculation Spray System as it is addressed in the UFSAR and the Containment Recirculation Spray System SDBD. These Technical Specification changes are also consistent with the accident analysis bases.

## Background

In the event of a high energy break inside containment, such as a Loss of Coolant Accident (LOCA) or a Main Steam Line Break (MSLB), the Containment Recirculation Spray System (in conjunction with the containment Quench Spray System) is designed to limit the post accident pressure and temperature in the containment to less than the design values and to depressurize the containment to a subatmospheric pressure in less than 60 minutes. The Containment Recirculation Spray System will then function to maintain the containment at a subatmospheric pressure. This is accomplished by pumping water from the containment sump through the containment recirculation spray heat exchangers (which are cooled by the service water system) and then to a series of spray headers in the overhead of the containment. This cooled water is then sprayed inside the containment to absorb additional heat to start the cooling cycle over again. The water in the containment sump is a mixture of fluid from the break (either reactor coolant or secondary coolant from the steam generators) and cold borated water from the refueling water storage tank that has been sprayed into the containment by the Quench Spray System.

There are four containment recirculation spray pumps. Two pumps are located inside the containment and the other two pumps are located outside containment for accessibility for maintenance in the event of an accident that requires long term cooling. Because of the long run of suction piping to the outside containment recirculation spray pumps from the containment sump, it was necessary to install a system that would ensure that these pumps would have an adequate suction head. The system that was installed is called the Casing Cooling System. The Casing Cooling System has one common tank and two casing cooling

pumps. Each casing cooling pump supplies cold borated water to the suction of its associated outside containment recirculation spray pump.

The accident analysis bases and the Containment Recirculation Spray System SDBD divide the Containment Recirculation Spray System into two separate and independent trains. Each train is rated at 100% of the design heat removal capacity for a design basis accident and consists of one inside containment recirculation spray subsystem (including the pump, associated heat exchanger and flow path) and one outside containment recirculation spray subsystem (including the pump, associated heat exchanger and flow path, and one casing cooling pump and flow path). Each inside and outside containment recirculation spray subsystem is rated at 50% of the design heat removal capacity for a design basis accident. The accident analysis bases and the Containment Recirculation Spray System SDBD considers the casing cooling pump subsystem as part of the outside containment recirculation spray subsystem since its only function is to ensure that adequate suction exists for the outside containment recirculation spray pump.

However, the current Technical Specifications do not divide the containment recirculation spray subsystems into two separate and independent trains as described in the accident analysis bases and the Containment Recirculation Spray System SDBD. Technical Specifications currently state that the Containment Recirculation Spray System consists of six subsystems and the casing cooling tank as follows:

- four separate and independent containment recirculation spray subsystems, each composed of a spray pump, associated heat exchanger and flow path,

- two separate and independent outside recirculation spray pump casing cooling subsystems, each composed of a casing cooling pump, and flow path capable of transferring fluid from the casing cooling tank to the suction of the outside recirculation spray pumps, and

- one casing cooling tank.

This difference between the current Technical Specifications and the accident analysis bases/Containment Recirculation Spray System SDBD results in operational limitations that are more restrictive than necessary to comply with the accident analysis bases. The accident analysis bases assumes that one train of Containment Recirculation Spray System fails to operate during a design basis accident. A single train of containment recirculation spray is capable of supplying 100% of the required containment recirculation spray assumed in the accident analysis bases. The current Technical Specifications only allow one of the six subsystems listed above to be inoperable (the remaining subsystems would be capable of 150% of the capacity assumed in the accident analysis bases). If more than one of the six subsystems listed above becomes inoperable, then Technical Specification 3.0.3 must be entered. Technical Specification 3.0.3 requires that within one hour action must be taken to place the unit in a mode in which the Technical Specification does not apply. This could result in unnecessary plant shutdowns even though the units are still within the design parameters of the accident analysis bases.

With the present Technical Specification limitations for the Containment Recirculation Spray System, each unit must enter Technical Specification 3.0.3 during surveillance testing of the emergency bus undervoltage/degraded voltage protection circuits. This periodic test, performed quarterly, renders both an outside containment recirculation spray pump and a

casing cooling pump (i.e., two subsystems) inoperable for a brief period of time. Since the outside recirculation spray is associated with the casing cooling pump, the remaining subsystems are capable of supplying 150% of the capacity required by the accident analysis bases. This condition has been reported in Licensee Event Report (LER) 92-016-00 which notified the NRC that each time this surveillance test is performed, Technical Specification 3.0.3 is briefly entered.

Technical Specification 3.6.2.2 will be changed to define the Containment Recirculation Spray System as consisting of two trains. Each train shall consist of:

- one inside containment recirculation spray subsystem composed of an inside recirculation spray pump, associated heat exchanger and flow path, and

- one outside containment recirculation spray subsystem composed of an outside recirculation spray pump, associated heat exchanger and flow path, and a casing cooling pump with a flow path capable of transferring fluid from the casing cooling tank to the suction of the outside recirculation spray pump, and

- one casing cooling tank (shared with both trains)

The concept of the Containment Recirculation Spray System as consisting of two trains, rather than as various subsystems, is consistent with the accident analysis bases and the Containment Recirculation Spray System SDBD. Unfortunately, the Standard Technical Specifications for Westinghouse Pressurized Water Reactors, NUREG-0452, dated May 1978, which serves as the model for the North Anna Technical Specifications, provides no guidance in this instance because it does not specifically address the issue. The Standard Technical Specifications employ the term "subsystem" in describing the components of the Containment Recirculation Spray System, but fails to define the term.

Technical Specification 3.6.2.2 Action "a" will address the inoperability of one subsystem of containment recirculation spray. The change deletes the reference to a separate casing cooling subsystem since the casing cooling subsystem is considered a part of the outside recirculation spray subsystem. The remaining three subsystems still provide 150% of the required capacity assumed in the accident analysis bases and the seven day time limitation to restore the subsystem to operable status is retained from the current Technical Specifications.

Technical Specification 3.6.2.2 Action "b" will address the inoperability of two subsystems in one train of containment recirculation spray. The other operable train of containment recirculation spray will still provide 100% of the capacity assumed in the accident analysis bases. The 72 hour action to restore at least one subsystem to operable status takes into account the redundant capacity of the operable train, a reasonable amount of time for repairs, and the low probability of a design basis accident occurring during this period.

Technical Specification Action "c" will address the inoperability of the casing cooling tank. Both containment recirculation spray trains require the casing cooling tank to be operable. The time frame associated with this action remains unchanged from current Technical Specifications.

## Technical Specification Changes

General

The Technical Specification changes described herein apply to North Anna Units 1 and 2.

Technical Specification 3.6.2.2 - Limiting Condition for Operation

The Technical Specification changes will separate the containment recirculation spray subsystems into two containment recirculation spray trains. Each train will consist of one inside recirculation spray subsystem (including the pump, associated heat exchanger and flow path) and one outside containment recirculation spray subsystem (including the pump, associated heat exchanger and flow path, and its associated casing cooling pump and flow path).

Technical Specification 3.6.2.2 - Action "a"

This action addresses the inoperability of one subsystem in one train of the Containment Recirculation Spray System and will delete the reference to one casing cooling subsystem being inoperable.

Technical Specification 3.6.2.2 - Action "b"

This action will address the inoperability of two subsystems in one train of the Containment Recirculation Spray System. This will require that one inoperable subsystem be restored to operable status within 72 hours or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

Technical Specification 3.6.2.2 Action "c"

This action will address the inoperability of the casing cooling tank and is currently Action "b" of the existing Technical Specification.

In addition, minor editorial changes have been made to these TS sections to improve the readability.

## Safety Significance

A safety evaluation has been performed for this proposed Technical Specification change. These Technical Specification changes will not affect the capability of the Containment Recirculation Spray System to perform its design function. The system performance will remain bounded by the existing accident analysis bases. The Technical Specification changes allow periodic testing without reliance on Technical Specification 3.0.3.