

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

February 26, 2002

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

Serial No. 02-124
NL&OS/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
PROPOSED TECHNICAL SPECIFICATION CHANGES
QUENCH SPRAY AND RECIRCULATION SPRAY NOZZLES
SURVEILLANCE FREQUENCY

Pursuant to 10 CFR 50.90, Virginia Electric and Power Company (Dominion) requests amendments, in the form of changes to the Technical Specifications to Facility Operating Licenses Numbers NPF-4 and NPF-7 for North Anna Power Station Units 1 and 2, respectively. The proposed changes will revise the surveillance frequency of the quench spray and recirculation spray system spray header nozzles from a periodic surveillance to a performance-based surveillance. A discussion of the proposed Technical Specifications changes is provided in Attachment 1. The mark-up and proposed pages are provided in Attachments 2 and 3, respectively. The proposed pages are provided in Improved Technical Specifications format due to the impending approval and issue of Improved Technical Specifications for North Anna Power Station.

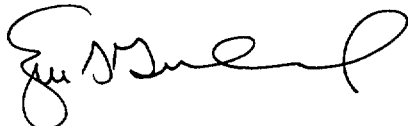
We have evaluated the proposed Technical Specifications changes and have determined that they do not involve a significant hazards consideration as defined in 10 CFR 50.92. The basis for our determination that the changes do not involve a significant hazards consideration is provided in Attachment 4. We have also determined that operation with the proposed changes will not result in any significant increase in the amount of effluents that may be released offsite and no significant increase in individual or cumulative occupational radiation exposure. Therefore, the proposed amendment is eligible for categorical exclusion as set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment is needed in connection with the approval of the proposed changes.

A periodic surveillance test of the spray nozzles is currently scheduled for the Unit 2 Fall refueling outage. To permit effective outage planning, it is requested that the NRC approve the proposed Technical Specification changes by August 2002.

A001

A similar license amendment was approved by the NRC for Perry Nuclear Power Station on June 29, 2000 (TAC No. MA1736). If you have any further questions or require additional information, please contact us.

Very truly yours,



Eugene S. Grecheck
Vice President – Nuclear Support Services

Attachments

Commitments made in this letter:

1. The Post Maintenance Testing Program will address the need for a specific evaluation to determine if a spray nozzle inspection or test is necessary to ensure the nozzles remain unobstructed after maintenance on the spray ring headers.

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Attachment 1
Discussion of Changes

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

Discussion of Changes

Introduction

Pursuant to 10 CFR 50.90, Virginia Electric and Power Company (Dominion) requests a change to Improved Technical Specifications Surveillance Requirements SR 3.6.6.5 and SR 3.6.7.7 for North Anna Units 1 and 2. The proposed change will revise the surveillance frequency of the Quench Spray (QS) and Recirculation Spray (RS) Subsystems spray ring nozzles surveillance. The proposed change will require the surveillance to be performed after spray ring header maintenance which could have resulted in nozzle blockage, thus verifying that foreign material has not been left in the spray ring headers that could render the nozzles obstructed.

The proposed change has been reviewed and it has been determined that the change qualifies for categorical exclusion from an environmental assessment as set forth in 10 CFR 51.22(c)(9). Therefore, no environmental impact statement or environmental assessment is needed in connection with the approval of the proposed change.

Background

Surveillance Requirements 3.6.6.5 and 3.6.7.7 presently require that each containment spray nozzle be verified unobstructed on a 10-year frequency. The Technical Specification Bases further clarifies that the test is performed using an air or smoke flow test to verify that the spray nozzles are not obstructed and that flow will be provided when required. The requested revision would change the frequency to require this test following spray header maintenance that could result in nozzle blockage. Nozzle blockage is considered unlikely during periods without maintenance, since the nozzles are of a passive design and the system is kept in a normally dry state. The proposed frequency has been shown to be acceptable through operating experience.

The cost associated with performance of this test is not considered to be commensurate with the safety benefit unless there has been an activity which has likely resulted in the introduction of material into the piping that may lead to nozzle blockage. The air/smoke flow test impacts fuel movement in containment, presents a personnel safety risk for the individual(s) required to access the top of containment to check the nozzle air flow, and is expensive to implement. Since the QS and RS safety function can be better ensured with the proposed frequency (performing this test if maintenance is performed that could block the nozzles), approval of the proposed frequency change is being requested prior to the next Unit 2 refueling outage (September 2002) when the test is scheduled for performance.

Description of Changes

The frequency for Technical Specifications SR 3.6.6.5 and 3.6.7.7 is being revised to read: "Following maintenance which could result in nozzle blockage."

The bases are being revised to include "inspection" as a method to verify that the nozzles are unobstructed. The annotated Bases pages are contained in Attachments 2 and 3 "for information only." Since the Bases are not part of the Technical Specifications, this revision is not submitted as a formal part of this license amendment request. The Bases are revised under the Bases Control Program.

Safety Implications of the Proposed Changes

Surveillance Requirements (SR) 3.6.6.5 and 3.6.7.7 require that each quench spray and recirculation spray subsystem nozzle is verified unobstructed on a 10-year frequency. The Bases further clarifies that the test is performed using an air or smoke flow test to verify that the spray nozzles are not obstructed and that flow will be provided when required. This change would require verification that the nozzles are unobstructed after maintenance that could cause nozzle blockage.

The containment depressurization system is used to return the containment atmosphere to subatmospheric pressure after a LOCA by removing heat from the containment structure. The containment depressurization system consists of two subsystems: (1) the QS subsystem and (2) the RS subsystem. The QS subsystem transfers heat from the containment atmosphere to the quench spray, which is collected in the containment sump. The RS subsystem transfers heat, via the RS coolers, from the water collected on the containment structure floor and from the containment atmosphere to the Service Water system.

The containment depressurization system consists of two separate but parallel QS subsystems, each of 100% capacity, and four separate but parallel RS subsystems, each of approximately 50% capacity.

Each QS train contains a pump and a 360-degree quench spray ring header located approximately 100 feet above the operating floor in the dome of the containment structure. The ring headers each have 260 nozzle sites. The piping is fabricated of Type 304 stainless steel piping and the spray nozzles are brass. Every eleventh nozzle position is a capped spare, leaving 239 actual installed nozzles. The quench spray pumps are located in the safeguards area, an enclosure adjacent to the containment structure.

The QS pump discharge MOVs and weighted check valves are maintained closed during normal operation to provide containment isolation. Each quench spray supply line to the containment contains a weight-loaded check valve to prevent air inleakage to the containment when it is at subatmospheric pressure. The QS discharge MOVs are Type C leak tested and the weighted check valves are tested in accordance with Technical Specifications. One-quarter-inch drain lines located downstream of the check valves inside the containment will drain the QS manifolds should any water enter the manifolds during periodic testing. In addition, each train of QS has a four-inch line downstream of the isolation valves that supplies water to the suction of the RS pumps for increased NPSH. This four-inch line would also serve to prevent any water collection in

the supply headers. Containment sump inleakage is monitored and recorded in the control room during plant operations, which provides another method to identify any leak-by of the QS and RS MOVs.

Each RS train consists of an RS pump, an RS cooler, and a 180-degree spray ring header located approximately 85 feet above the operating floor of the containment structure. All piping and ring headers are constructed of Type 304 stainless steel piping and the spray nozzles are brass. Because of the corrosion-resistant material chosen for the nozzles, degradation of the spray nozzles is not expected. Two of the RS pumps and motors are located inside the containment structure, and two RS pumps and motors are located outside the containment.

Strainers are provided in the discharge of the QS pumps. Three layers of screening are provided in the suction of RS pumps. The strainers and the screen mesh are small enough to prevent any material that could plug the spray nozzles from passing through.

A smoke/air test has been performed at least twice since construction for the QS and RS systems nozzles.

<u>Unit 1</u>	<u>Unit 2</u>
Pre-operational tests	
QS - 12/19/75 and 8/03/77	QS - 3/30/78
RS - 01/12/76 and 8/10/77	RS - 3/30/78
TS surveillance tests	
QS - 10/30/82 and 3/27/93	QS - 10/4/90
RS - 10/29/82 and 4/2/93	RS - 10/25/90

The results of each test demonstrated unobstructed flow through each nozzle. These tests confirmed that the system was free from construction debris and also free from obstructions following startup and operation of the units.

A review of the maintenance and modification history since the last smoke/air test indicates a limited number of work orders and modifications have been performed on QS and RS MOV isolation valves or the system piping. The modifications associated with the valves were for operator adjustments and would not have affected system cleanliness. The maintenance activities included: repositioning the spectacle flange and elbows for RS testing activities, repair and adjustment of weighted discharge check valves, installing blanks on QS piping to support MOV leak testing, and RS heat exchanger inspections. Cleanliness control practices, including post work inspections, were utilized and documented in the work order to ensure system cleanliness requirements were maintained.

Routine maintenance activities with FME controls should not require performance of this surveillance. Only unanticipated circumstances should require performance of this

surveillance (such as inadvertent spray actuation or loss of foreign material control when working within the spray ring headers). Such unanticipated actions would initiate a Plant Issue which would require an evaluation of the circumstances and appropriate corrective actions to ensure the spray nozzles are operable and prevent recurrence.

Spray system maintenance procedures establish Foreign Material Exclusion controls and post-maintenance inspection when the spray system maintenance requires opening the system. In addition, the Post Maintenance Testing Program will address the need for a specific evaluation to determine if a spray nozzle inspection or test is necessary to ensure the nozzles remain unobstructed after maintenance on the spray ring headers.

Review of industry experience indicates that containment spray systems of similar design are highly reliable (i.e., not susceptible to plugging). Our review did identify two plants that had experienced an actual blockage. One event occurred at a plant that allowed water to enter their spray system during standby operation, which led to corrosion. At the other plant degradation of coating material led to the blockage. The operation and design of the North Anna QS and RS subsystems would preclude these conditions.

Due to the plant design, the spray ring headers are maintained dry. Formation of significant corrosion products is unlikely. Due to its location at the top of the containment, introduction of foreign material from exterior to the header is unlikely. Since maintenance that could introduce foreign material is the most likely cause for obstruction, testing or inspection following such maintenance would suffice to verify the potential for nozzle(s) blockage and the system's capability to perform its safety function. These reasons make the potential for nozzle obstruction very low. The requirement to verify the nozzles are not obstructed via flow testing every ten years is unnecessary. Verifying that the nozzles are not obstructed following maintenance that could introduce foreign material internal to the spray ring headers is the appropriate frequency. This verification would consist of an inspection of the nozzles, or an air or smoke test. A similar license amendment was approved by the NRC for Perry Nuclear Power Station on June 29, 2000 (TAC NO. MA1736).

Evaluation of Significant Hazards Consideration

The proposed revision to Technical Specifications changes the frequency of the surveillance requirement for the Quench Spray and Recirculation Spray nozzles. The frequency is being changed from every 10-years to "following maintenance which could result in nozzle blockage." In accordance with the requirements of 10 CFR 50.92, the enclosed application is judged to involve no significant hazards based upon the following information:

1. Does the proposed license amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

The proposed change revises the surveillance frequency from every 10-years to

"following maintenance that could result in nozzle blockage." Analyzed events are initiated by the failure of plant structures, systems or components. The containment spray system is not considered as an initiator of any analyzed event. The proposed change does not have a detrimental impact on the integrity of any plant structure, system or component that initiates an analyzed event. The proposed change will not alter the operation of, or otherwise increase the failure probability of any plant equipment that initiates an analyzed accident. As a result, the probability of any accident previously evaluated is not significantly increased.

The proposed change revises the surveillance frequency. Reduced testing is justified where operating experience has shown that routinely passing a surveillance test performed at a specified interval has no apparent connection to overall component reliability. In this case, routine surveillance testing at the specified frequency is not connected to any activity which may initiate reduced component reliability and therefore, has been of limited value in ensuring component reliability. Thus, the proposed frequency change is not significant for a reliability standpoint. The proposed containment spray nozzle surveillance frequency has been established based on achieving acceptable levels of equipment reliability.

This change does not affect the plant design. Due to the plant design, the spray ring headers are maintained dry. Formation of significant corrosion products is unlikely. Due to their location at the top of the containment, introduction of foreign material from exterior to the headers is unlikely. Since maintenance that could introduce foreign material is the most likely cause for obstruction, testing or inspection following such maintenance would verify the nozzle(s) remain unobstructed and the system's continued capability to perform its safety function. As a result, the consequences of any accident previously evaluated are not significantly affected by the proposed change.

2. Does the proposed license amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

The margin of safety for this system is based on the capacity of the spray headers. The system is not susceptible to corrosion induced obstruction or obstruction from external sources to the system. Performance of maintenance on the spray ring header would now require evaluation of the potential for nozzle blockage and the need for a test or inspection. Consequently, the spray header nozzles should remain unblocked and available in the event that the safety function is required. Therefore, the capacity of the system would remain unaffected. Hence, this change does not

involve a significant reduction in the margin of safety.

Environmental Assessment

This amendment request meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) as follows:

- (i) The amendment involves no significant hazards consideration.

As described in Section IV of this evaluation, the proposed change involves no significant hazards consideration.

- (ii) There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

The proposed change does not involve the installation of any new equipment, or the modification of any equipment that may affect the types or amounts of effluents that may be released offsite. Therefore, there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

- (iii) There is no significant increase in individual or cumulative occupational radiation exposure.

The proposed change does not involve plant physical changes, or introduce any new mode of plant operation. Therefore, there is no significant increase in individual or cumulative occupational radiation exposure.

Based on the above, Dominion concludes that the proposed changes meet the criteria specified in 10 CFR 51.22 for a categorical exclusion from the requirements of 10 CFR 51.22 relative to requiring a specific environmental assessment by the Commission.

Conclusion

The proposed change in the surveillance requirement for the QS and RS subsystem spray ring header nozzles will not alter assumptions relative to the mitigation of an accident or transient event and will not adversely affect normal plant operation and testing. Therefore, the proposed change is consistent with the current safety analysis assumptions and with the Technical Specifications.

The Station Nuclear Safety and Operating Committee (SNSOC) and the Management Safety Review Committee (MSRC) have reviewed this proposed change to the Technical Specifications and have concluded that it does not involve a significant hazards consideration and will not endanger the health and safety of the public.

Attachment 2

Mark-up of Unit 1 and Unit 2 Technical Specifications Changes

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.6.3 Verify each QS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months
SR 3.6.6.4 Verify each QS pump starts automatically on an actual or simulated actuation signal.	18 months
SR 3.6.6.5 Verify each spray nozzle is unobstructed.	10 years ^A

FOLLOWING MAINTENANCE WHICH COULD CAUSE NOZZLE BLOCKAGE

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.7.4	Verify each RS and casing cooling manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	31 days
SR 3.6.7.5	Verify each RS and casing cooling pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.6.7.6	Verify on an actual or simulated actuation signal(s): a. Each RS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position; b. Each RS pump starts automatically; and c. Each casing cooling pump starts automatically.	18 months
SR 3.6.7.7	Verify each spray nozzle is unobstructed.	10 years ^Δ

Following MAINTENANCE WHICH COULD CAUSE NOZZLE BLOCKAGE

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.6.6.1 (continued)

since they were verified to be in the correct position prior to being secured. This SR does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown, that those valves outside containment and capable of potentially being mispositioned are in the correct position.

SR 3.6.6.2

Verifying that each QS pump's developed head at the flow test point is greater than or equal to the required developed head ensures that QS pump performance is consistent with the safety analysis assumptions. Flow and differential head are normal tests of centrifugal pump performance required by the ASME Code (Ref. 4). Since the QS System pumps cannot be tested with flow through the spray headers, they are tested on recirculation flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. The Frequency of this SR is in accordance with the Inservice Testing Program. R13

SR 3.6.6.3 and SR 3.6.6.4

These SRs ensure that each QS automatic valve actuates to its correct position and each QS pump starts upon receipt of an actual or simulated Containment Pressure high-high signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 18 month Frequency is based on the need to perform these Surveillances under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillances were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillances when performed at an 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.6.6.5

With the quench spray inlet valves closed and the spray header drained of any solution, low pressure air or smoke can be blown through test connections. This SR ensures that each

or an inspection of the nozzles can be performed. (continued)

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.6.6.5 (continued)

spray nozzle is unobstructed and that spray coverage of the containment during an accident is not degraded. Due to the passive nature of the design of the nozzle and the non-corrosive design of the system, a test at ~~10 year intervals~~ ^{10 year intervals} is considered adequate to detect obstruction of the nozzles.

REFERENCES

1. UFSAR, Section 6.2.
2. 10 CFR 50.49.
3. 10 CFR 50, Appendix K.
4. ASME Code for Operation and Maintenance of Nuclear Power Plants.

R13

performed following maintenance which could result in nozzle blockage

BASES

SURVEILLANCE
REQUIREMENTS
(continued)

SR 3.6.7.5

Verifying that each RS and casing cooling pump's developed head at the flow test point is greater than or equal to the required developed head ensures that these pumps' performance has not degraded during the cycle. Flow and differential head are normal tests of centrifugal pump performance required by the ASME Code (Ref. 4). Since the RS System pumps cannot be tested with flow through the spray headers, they are tested on recirculation flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. The Frequency of this SR is in accordance with the Inservice Testing Program. R13

SR 3.6.7.6

These SRs ensure that each automatic valve actuates and that the RS System and casing cooling pumps start upon receipt of an actual or simulated High-High containment pressure signal. Start delay times are also verified for the RS System pumps. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency was considered to be acceptable from a reliability standpoint.

SR 3.6.7.7

This SR ensures that each spray nozzle is unobstructed and that spray coverage of the containment will meet its design bases objective. An air or smoke test is performed through each spray header. Due to the passive design of the spray header and its normally dry state, a test at 10 year intervals is considered adequate for detecting obstruction of the nozzles.

EITHER AN INSPECTION OF THE NOZZLES OR

performed following maintenance which could result in nozzle blockage

REFERENCES

1. UFSAR, Section 6.2.

Attachment 3

Proposed Unit 1 and Unit 2 Technical Specifications Changes

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.6.3	Verify each QS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months
SR 3.6.6.4	Verify each QS pump starts automatically on an actual or simulated actuation signal.	18 months
SR 3.6.6.5	Verify each spray nozzle is unobstructed.	Following maintenance which could cause nozzle blockage

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.7.4	Verify each RS and casing cooling manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	31 days
SR 3.6.7.5	Verify each RS and casing cooling pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.6.7.6	Verify on an actual or simulated actuation signal(s): a. Each RS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position; b. Each RS pump starts automatically; and c. Each casing cooling pump starts automatically.	18 months
SR 3.6.7.7	Verify each spray nozzle is unobstructed.	Following maintenance which could cause nozzle blockage

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.6.6.1 (continued)

since they were verified to be in the correct position prior to being secured. This SR does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown, that those valves outside containment and capable of potentially being mispositioned are in the correct position.

SR 3.6.6.2

Verifying that each QS pump's developed head at the flow test point is greater than or equal to the required developed head ensures that QS pump performance is consistent with the safety analysis assumptions. Flow and differential head are normal tests of centrifugal pump performance required by the ASME Code (Ref. 4). Since the QS System pumps cannot be tested with flow through the spray headers, they are tested on recirculation flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. The Frequency of this SR is in accordance with the Inservice Testing Program.

SR 3.6.6.3 and SR 3.6.6.4

These SRs ensure that each QS automatic valve actuates to its correct position and each QS pump starts upon receipt of an actual or simulated Containment Pressure high-high signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 18 month Frequency is based on the need to perform these Surveillances under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillances were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillances when performed at an 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.6.6.5

With the quench spray inlet valves closed and the spray header drained of any solution, low pressure air or smoke can be blown through test connections or an inspection of the

(continued)

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.6.6.5 (continued)

nozzles can be performed. This SR ensures that each spray nozzle is unobstructed and that spray coverage of the containment during an accident is not degraded. Due to the passive nature of the design of the nozzle and the non-corrosive design of the system, a test performed following maintenance which could result in nozzle blockage is considered adequate to detect obstruction of the nozzles.

REFERENCES

1. UFSAR, Section 6.2.
 2. 10 CFR 50.49.
 3. 10 CFR 50, Appendix K.
 4. ASME Code for Operation and Maintenance of Nuclear Power Plants.
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BASES

SURVEILLANCE
REQUIREMENTS
(continued)

SR 3.6.7.5

Verifying that each RS and casing cooling pump's developed head at the flow test point is greater than or equal to the required developed head ensures that these pumps' performance has not degraded during the cycle. Flow and differential head are normal tests of centrifugal pump performance required by the ASME Code (Ref. 4). Since the RS System pumps cannot be tested with flow through the spray headers, they are tested on recirculation flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. The Frequency of this SR is in accordance with the Inservice Testing Program.

SR 3.6.7.6

These SRs ensure that each automatic valve actuates and that the RS System and casing cooling pumps start upon receipt of an actual or simulated High-High containment pressure signal. Start delay times are also verified for the RS System pumps. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency was considered to be acceptable from a reliability standpoint.

SR 3.6.7.7

This SR ensures that each spray nozzle is unobstructed and that spray coverage of the containment will meet its design bases objective. Either an inspection of the nozzles or an air or smoke test is performed through each spray header. Due to the passive design of the spray header and its normally dry state, a test performed following maintenance which could result in nozzle blockage is considered adequate for detecting obstruction of the nozzles.

REFERENCES

1. UFSAR, Section 6.2.
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