VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

July 14, 1995

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

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NL&P/ETS:	R0
Docket Nos.	50-280
	50-281
License Nos.	DPR-32
	DPR-37

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
PROPOSED TECHNICAL SPECIFICATIONS CHANGE
RHR ALLOWED OUTAGE TIME AND
ACCUMULATOR ISOLATION/DEPRESSURIZATION

Pursuant to 10 CFR 50.90, the Virginia Electric and Power Company requests amendments, in the form of a change to the Technical Specifications, to Facility Operating License Nos. DPR-32 and DPR-37 for Surry Power Station Units 1 and 2 . The proposed Technical Specifications changes will provide a two hour allowed outage time for one RHR pump to accommodate plant safety and emergency power systems surveillance testing and permit depressurizing the Safety Injector accumulators in lieu of accumulator isolation.

A discussion of the proposed Technical Specifications change for Surry is provided in Attachment 1. The proposed Technical Specifications change is provided in Attachment 2. It has been determined that the proposed Technical Specifications change does 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 the change does not involve a significant hazards consideration is provided in Attachment 3. The proposed Technical Specifications change has 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,

For

James P. O'Hanlon
Senior Vice President - Nuclear

Attachments

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cc: U.S. Nuclear Regulatory Commission
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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 E. W. Harrell, who is Vice President - Nuclear Engineering Services, for J. P. O'Hanlon 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 14 day of July, 1995.

My Commission Expires: Aug. 31, 1998.

Carolyn M. Collins
Notary Public

(SEAL)

Attachment 1

Discussion of Change

Surry Power Station

DISCUSSION OF CHANGES

INTRODUCTION

Reactor Coolant System (RCS) and pressurizer heatups and cooldowns have recently become a generic industry issue and are currently being evaluated by the Westinghouse Owners Group (WOG). To reduce the possibility of thermal transients in the RCS and pressurizer below 350 degrees F, the Owners Group has provided recommendations for an operating strategy to simultaneously cooldown the RCS and pressurizer. During certain portions of the cooldown evolutions, the recommended plant conditions limit the options for operable cooling loops below 350°F to only the two Residual Heat Removal (RHR) trains. However, the existing Technical Specifications requirements for operable RHR shutdown cooling loops do not provide an allowed outage time (AOT) for surveillance testing. Therefore, in order for Surry to implement the Owners Group's recommendations during the next refueling outage, Virginia Electric and Power Company (Virginia Power) is proposing a Technical Specifications change for the Residual Heat Removal System. The proposed Technical Specifications change will provide a two hour allowed outage time for one RHR pump to accommodate plant surveillance testing. This change is consistent with NUREG-1431, Standard Technical Specifications For Westinghouse Plants (Reference 1).

Surveillance testing is necessary to assure that the RHR and interfacing systems' reliability is maintained. Existing analyses demonstrate that adequate shutdown cooling will be maintained with one train of RHR operable and in service. Analyses also demonstrate that alternate shutdown cooling modes remain available with adequate decay heat removal capability. Furthermore, the train of RHR affected by the surveillance testing remains available while in the two hour Allowed Outage Time. The response time and operator actions required to place the affected RHR train in service are consistent with similar operator response times and actions required to place alternate shutdown cooling modes in service or return RHR to service after a loss of normal power. The administrative controls and procedures in place assure adequate shutdown cooling capability is maintained as supported by existing analyses.

In addition, Surry Power Station Technical Specifications were recently amended to include additional operability and surveillance requirements for the pressurizer power operated relief valves (PORV) as required by Generic Letter 90-06 (Reference 2). Additional controls were established for both the Charging/High Head Safety Injection pumps and the Safety Injection (SI) accumulators to eliminate the potential for an inadvertent overpressurization of the Reactor Coolant System (RCS). The existing Technical Specifications require that the SI accumulators be isolated whenever the RCS average temperature is less than or equal to 350 degrees F. The Technical Specifications provide for opening the SI accumulator discharge isolation valves for up to six hours to perform valve testing. However, under the current Technical Specifications for the SI accumulator isolation discharge valves, no provision exists that permits the performance of SI accumulator valve maintenance. The existing six hour AOT for the SI accumulator isolation valves specifically refers to valve testing

only. Therefore, in order to perform maintenance on the isolation valves without violating the Technical Specifications Virginia Power is proposing a Technical Specifications change. The proposed change permits depressurizing the Safety Injection accumulators when the RCS pressure is less than the Low Temperature Overpressure System (LTOP) setpoint (385 psig) in lieu of accumulator isolation.

The existing Technical Specifications also require verification that the SI accumulator discharge isolation valves are closed. When the pressure of the SI accumulator is less than the Low Temperature Overpressure Protection System (LTOPS) PORV lift setpoint, an inadvertent SI accumulator discharge neither challenges the integrity of the Reactor Coolant System nor results in an inadvertent LTOPS PORV lift. Under these conditions, the 12-hour surveillance which verifies SI accumulator isolation is unnecessary. The proposed Technical Specifications change also eliminates the 12 hour verification of SI accumulator discharge valve isolation when the SI accumulators are depressurized to a pressure less than the LTOPS setpoint (385 psig).

Isolation of the SI accumulator isolation valves ensures that the accumulators are not a source of overpressure during low temperature RCS operation. Depressurizing the accumulator to a pressure below the LTOPS overpressure setpoint eliminates the potential for an inadvertent PORV lift due to accumulator discharge and possible overpressurization of the RCS. Therefore, depressurizing the accumulator is an acceptable alternative to isolation.

The existing safety analyses demonstrate that Reactor Coolant System integrity will be maintained when accumulator pressure is below the pressurizer PORV LTOPS setpoint. The LTOPS enabling temperature and relief setpoint remain unchanged. No operating limits or setpoints are added or deleted by the proposed Technical Specifications change, and RCS pressure relief paths are not affected. This change is consistent with NUREG-0452 (Reference 3).

Therefore, the proposed Technical Specifications change as described above does not result in an unreviewed safety question.

BACKGROUND

RHR Pump Operability

The industry, through the Westinghouse Owners Group, has been developing strategies for mitigating or eliminating pressurizer insurge and outsurge transients during plant heatup and cooldown operations. These transients are a result of coolant insurges and outsurges and are of concern during normal heatup and cooldown evolutions when the temperature difference is large (200°F to 320°F) between the water in the pressurizer and in the RCS hot leg. Recently, Surry Unit 2 inadvertently violated the Technical Specifications heatup rate limit for the Pressurizer due to a Pressurizer insurge/outsurge transient during shutdown operations. This event was the subject of a notice of violation identified in a recent NRC Inspection Report (Reference 4). In response to this violation, Virginia Power informed the NRC staff that we had implemented additional monitoring during unit cooldown activities in response to the recent industry events in which the Technical Specifications limits for RCS and

pressurizer cooldowns had been exceeded. To prevent recurrence of the violation and to reduce the thermally induced stress on the pressurizer, Virginia Power plans to implement an industry initiative during the cooldown during the upcoming Unit 1 refueling outage.

The goal of this initiative is to reduce the temperature differential between the pressurizer and the RCS loops, and thereby reduce the time that a temperature differential will exist during cooldown operations. This initiative will reduce the thermally induced stress at the pressurizer nozzle, as well as, the potential for insurge/outsurge transients. The plant cooldown will be completed expeditiously to reduce the potential for insurge/outsurge transients. Surveillance testing (that could cause a perturbation of the RCS) will be postponed until the unit is less than 200°F. Once the unit is cooled below 200°F, the RCS will be vented and drained to establish an indicated pressurizer level. However, with the RCS in this condition, the RCS loops are not available for subcooled heat removal and only the RHR loops are available to meet the Technical Specifications operability requirements for decay heat removal. Therefore, surveillance tests that were previously performed on the safety and emergency power systems that affected the RHR System when the RCS loops were operable cannot be performed without violating Technical Specifications operability requirements for operable decay heat removal loops.

In addition, Specification 3.1.A.1.d addresses the minimum requirements for reactor coolant loops and residual heat removal loops when reactor coolant loop temperature is less than or equal to 350°F. This Specification includes reference to Specification 3.10.A.6 regarding residual heat removal loop operability during Refueling Operations. To ensure those conditions which only apply to Refueling Operations are clearly delineated, Specification 3.1.A.1.d is being restructured in a more logical order. The restructuring is an administrative change that does not alter the specified requirements and will ensure that one residual heat removal loop remains in operation while surveillance testing is being perfforrmed on the other residual heat removal loop.

Safety Injection Accumulator Depressurizing

In response to Generic Letter 90-06 (Reference 2), Surry Power Station Technical Specifications were recently amended (Reference 5) to include additional operability and surveillance requirements for the pressurizer power operated relief valves (PORV). Reference 1 was used as guidance to establish the limiting conditions for operation, allowed outage times (AOT), and surveillance requirements.

Reference 1 guidance included a footnote that further defined the applicability requirements for isolation of the SI accumulator during low temperature operations. This footnote specifies that the SI accumulator isolation requirement is no longer applicable when the SI accumulator is depressurized to less than the applicable pressure/temperature limit for the RCS cold leg temperature. The proposed Surry Technical Specifications did not include this note, but did include a six hour AOT to permit the isolation valve to be open for testing. Verbatim compliance with the SI accumulator AOT restricts maintenance on the valve even when the SI accumulator was depressurized. In addition, this AOT would permit opening the SI accumulator

isolation valve for testing with the SI accumulator pressure greater that the LTOPS PORV setpoint, resulting in a challenge to the LTOPS.

In addition, Specification 3.1.G.1.b includes requirements for overpressure mitigation prior to going below an RCS average temperature of 350°F, as well as, specifying requirements for overpressure mitigation when conditions are less than or equal to an RCS average temperature of 350°F. Therefore, to ensure an orderly transition through the Specification requirements, the requirements have been restructured, separating the requirements consistent with plant operating conditions. This is an administrative change which does not alter the requirements of the Specification and ensures the Specification requirements for the applicable RCS conditions are properly ordered.

SPECIFIC CHANGES

RHR Pump Operability

To perform Technical Specification required surveillance testing, an AOT for the RHR System is necessary to prevent violation of the Technical Specifications. The following changes are proposed:

The proposed Technical Specification 3.1.A.1.d.1 is being revised as follows:

- TS 3.1.A.1.d.1 is being revised to add an additional exception, the proposed AOT TS for the RHR System, and reads as follows:

  1. A minimum of two non-isolated loops, consisting of any combination of reactor coolant loops or residual heat removal loops, shall be OPERABLE, except as specified below:

     (a) One RHR loop may be inoperable for up to 2 hours for surveillance testing provided the other RHR loop is OPERABLE and in operation.

     (b) During REFUELING OPERATIONS the residual heat removal loop may be removed from operation as specified in TS 3.10.A.6.

Safety Injection Accumulator Depressurizing

The LTOPS Technical Specification is being reformatted to present the operability and surveillance requirements in a more logical manner. The following changes are proposed:

- TS 3.1.G.1.b.(1)(a) and TS 3.1.G.1.b.(2)(b) which require verification of charging pump inoperability and accumulator isolation, respectively, are being combined and relocated as TS 3.1.G.1.b. The proposed TS 3.1.G.1.b. reads as follows:

Prior to decreasing RCS average temperature below 350°F, verify that a maximum of one charging pump is capable of injecting into the RCS, and that each accumulator is isolated. Thereafter, once per 12 hours:

(1) Verify that a maximum of one charging pump is capable of injection into the RCS.

(2) Verify that each accumulator is isolated, if isolation is required.

- TS 3.1.G.1.b.(1) and TS 3.1.G.1.b.(1)(c) are being combined into a single Limiting Condition for Operation renumbered as TS 3.1.G.1.c.(1). The proposed TS 3.1.G.1.c.(1) reads as follows:

  A maximum of one charging pump shall be OPERABLE and capable of injecting into the RCS. Two charging pumps may be in operation momentarily during transfer of operation from one charging pump to another.

- A provision to permit depressurizing the accumulator in lieu of accumulator isolation is being added to TS 3.1.G.1.b.(2). This specification is being renumbered as TS 3.1.G.1.c.(2), and reads as follows:

  The accumulators shall be isolated (accumulator discharge valves closed and their respective breakers locked, sealed or otherwise secured in the open position). Isolation is not required if the accumulator pressure is less than the pressurizer PORV setpoint specified in TS 3.1.G.1.c.(4).

- A statement qualifying when the 12 hour accumulator isolation surveillance is required to be performed is included in TS 3.1.G.1.b.(2). The proposed TS 3.1.G.1.b.(2) reads as follows:

  verify that each accumulator is isolated, if isolation is required.

- TS 3.1.G.1.b.(2)(c) is being eliminated. This allowed outage time is no longer necessary since accumulator isolation is not required if the accumulator is depressurized to less than the pressurizer PORV setpoint.

- The basis is changed to include a discussion of depressurizing the SI accumulators. The basis change reads as follows:

  There are administrative controls to ensure isolation, including de-energizing the Safety Injection (SI) accumulator isolation valves, during plant shutdown conditions (RCS pressure less than 1000 psig) to prevent inadvertent SI accumulator discharge into the RCS for low temperature overpressurization concerns. A pressurizer PORV lift due to inadvertent SI accumulator discharge is not possible when SI accumulator pressure is less than the low temperature PORV lift setpoint specified in TS 3.1.G.

Therefore, SI accumulator isolation, and verification of such isolation is not necessary when SI accumulator pressure is less than the low temperature PORV setpoint.

- Miscellaneous editorial changes are made throughout the affected Technical Specifications changes for consistency, capitalization of defined words, and clarity.

SAFETY SIGNIFICANCE

RHR Pump Operability

The RHR System meets the design RCS cooldown requirements with either one or both trains of RHR in service. Surveillance requirements are necessary to assure that the RHR and interfacing systems' reliability is maintained. However, no Allowed Outage Time (AOT) exists within the Surry Technical Specifications to perform surveillance testing that affects the RHR System operability below 350 degrees F. Therefore, an Allowed Outage Time of two hours is being added to the Technical Specifications for the RHR System. Allowing a two hour AOT within the RHR operability requirements of Technical Specifications is a TS enhancement which precludes a Technical Specification violation for conditions where a train of RHR will be out of service for surveillance testing.

The proposed Technical Specification change does not increase the probability or consequences of an accident previously evaluated. Surveillance and testing requirements are necessary to assure that the RHR and interfacing systems' reliability is maintained. A conservative allowed outage time of two hours is being proposed. Existing analyses demonstrate that adequate shutdown cooling will be maintained with one train of RHR Operable and in service. Analyses also demonstrate that alternate shutdown cooling modes remain available with adequate decay heat removal capability. Furthermore, the opposite train of RHR remains available while in the two hour surveillance AOT. The response time and operator actions required to place the affected RHR train in service are consistent with similar operator response times and actions required to place alternate shutdown cooling modes in service. The administrative controls and procedures in place assure adequate shutdown cooling capability is maintained as supported by existing analyses.

The proposed Technical Specifications do not create the possibility of a new or different kind of accident from any accident previously evaluated. The proposed Technical Specifications change allows a two hour AOT within the RHR operability requirements of the Technical Specifications as an enhancement. The proposed AOT will preclude the possibility of a Technical Specification violation for conditions where a train of RHR is out of service for plant system surveillance testing. Calculations by Westinghouse with evaluations and supporting analyses performed by Virginia Power, confirm the adequacy of decay heat removal with one RHR train in service, and multiple alternate shutdown cooling modes remain available. There are no plant modifications required by this proposed TS change. Further, the proposed change does not invalidate any component design criteria or the assumptions of the UFSAR accident analyses. The RHR System is being operated in a manner consistent with

the design basis and configuration of the system and is supported by existing analyses and procedural controls.

The proposed Technical Specifications change does not involve a reduction in a margin of safety. The existing safety analyses demonstrate that adequate shutdown cooling will be maintained when the Operable train of RHR is out of service for up to two hours for plant system surveillance testing while the opposite train of RHR is operating. Supporting analyses determined that the RHR System meets the design cooldown requirements for a reactor core rating of 2546 MWth with either one or both trains of RHR in service. Additionally, an evaluation of the technical basis for shutdown operations for the proposed Surry core uprating to 2546 MWth determined that the administrative controls and Abnormal Procedures in place at Surry ensure adequate decay heat removal capability during shutdown conditions. The administrative controls and procedure revisions were supported by a detailed series of thermal-hydraulic calculations for various loss of RHR scenarios. Adding the two hour AOT for surveillance testing is a TS enhancement which precludes the possibility of a TS violation. Shutdown cooling remains procedurally controlled with adequate alternate modes of shutdown cooling available to the operator. There is no reduction in shutdown cooling capability due to the proposed TS change, and no reduction in mitigating a loss of decay heat removal event. Consequently, system design, plant configuration, and administrative controls remain available to adequately mitigate a loss of RHR event with a single train of RHR out of service for up to two hours during surveillance testing.

Therefore, the proposed Technical Specifications change to establish a RHR System AOT does not result in an unreviewed safety question.

Safety Injection Accumulator Depressurizing

Isolation of the SI accumulator isolation valves eliminates the SI accumulators as a potential cause of overpressurization during low temperature RCS operation. Depressurizing the SI accumulator to a pressure below the LTOPS overpressure setpoint (385 psig) also eliminates any inadvertent PORV lift due to SI accumulator discharge, and possible overpressure concerns and is an acceptable alternative to isolation.

The proposed Technical Specifications change does not increase the probability or consequences of an accident previously evaluated. The existing safety analyses demonstrate that Reactor Coolant System integrity will be maintained when SI accumulator pressure is below the pressurizer PORV LTOPS setpoint. With RCS temperature below the LTOPS enabling temperature, automatic actuation of the pressurizer PORVs or other TS specified relief paths, ensure that the assumed design basis reactor vessel beltline flaw will not propagate under design basis low-temperature overpressurization accident conditions. System design and configuration adequately mitigate an LTOPS actuation due to an SI accumulator discharge with no negative consequences regarding RCS structural integrity or SBLOCA concerns.

The proposed Technical Specifications change does not create the possibility of a new or different kind of accident from any accident previously evaluated. The LTOPS

enabling temperature remains unchanged. No operating limits or setpoints are added or deleted by the proposed change, and the RCS pressure relief paths are not affected.

The proposed Technical Specifications change does not involve a reduction in a margin of safety. The existing safety analyses demonstrate that RCS integrity will be maintained in the event of an inadvertent SI accumulator discharge when SI accumulator pressure is below the pressurizer PORV LTOPS setpoint. Sufficient administrative controls are maintained to ensure LTOPS is "enabled" and SI accumulators are isolated at the appropriate RCS conditions to minimize the possibility of challenging Reactor Coolant System integrity. Technical Specifications administrative controls that prevent inadvertent charging pump operation, maintain adequate relief paths, and restrict Steam Generator primary to secondary temperature differential remain in place. Consequently, the proposed Technical Specifications change ensures that an inadvertent SI accumulator discharge cannot challenge RCS structural integrity during LTOPS conditions when SI accumulator pressure is below the pressurizer PORV LTOPS setpoint.

The Safety Injection accumulator motor operated valves are required to be de-energized in a specified position prior to power operation, as well as, prior to RCS temperature being less than or equal to 350°F. The valve's breaker is required to be locked, sealed or otherwise secured in the specified position once the valve has been properly positioned and de-energized, to ensure that the valve cannot change position as a result of an active failure or be inadvertently misaligned. The change is administrative in nature, maintains consistency with accumulator discharge valve breaker positioning elsewhere in the Specifications, and does not constitute a safety concern. These actions continue to ensure the flow path from the accumulator to the reactor coolant system is maintained isolated and that an inadvertent accumulator discharge does not occur.

Therefore, the proposed Technical Specifications change does not result in an unreviewed safety question.

REFERENCES

1. NUREG-1431, "Standard Technical Specifications for Westinghouse Plants," Revision 1, dated April 1995.

2. Generic Letter 90-06, "Resolution of Generic Issue 70, 'Power-Operated Relief Valve and Block Valve Reliability,' and Generic Issue 94, 'Additional Low-Temperature Overpressure Protection for Light-Water Reactors,' Pursuant to 10 CFR 50.54(f)," dated June 25, 1990.

3. NUREG-0452, "Standard Technical Specifications For Westinghouse Pressurized Water Reactors," Revision 4, dated Fall 1981.

4. NRC Inspection Report Nos. 50-280/95-06 and 50-281/95-06, dated April 14, 1995, for Surry Power Station.

5. Letter from the NRC to Mr. J. P. O'Hanlon dated May 2, 1995, Serial No. 95-244, "Surry Units 1 and 2 - Issuance of Amendments Re: Operability and Surveillance Requirements for Power-Operated Relief Valves."

Attachment 2

Technical Specifications Change

Surry Power Station