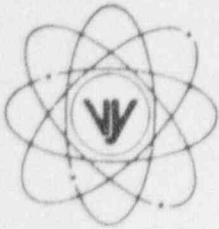


VERMONT YANKEE NUCLEAR POWER CORPORATION



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REPLY TO
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September 11, 1996
BVY 96-104

United States Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Reference: (a) License No. DPR-28 (Docket No. 50-271)

Attachments: (A) Proposed Changes to Technical Specifications and Bases - Affected Pages
(B) Proposed Changes to Technical Specifications and Bases - New Pages
(C) Justification for Operating With a Relaxed Safety/Relief Valve Setpoint Tolerance and 100% of Rated Power With an Inoperable SRV for the Vermont Yankee Nuclear Power Station

Subject: Proposed Change No. 185 - Safety and Relief Valve Setpoint Tolerance and Power Operation With an Inoperable SRV

Pursuant to 10CFR50.90 of the Commission's Rules and Regulations, Vermont Yankee Nuclear Power Corporation hereby proposes the following changes to Appendix A of the Facility Operating License [Reference (a)].

Proposed Change:

Vermont Yankee proposes to modify Sections 2.2.B and 3.6.D.1 of the Vermont Yankee Technical Specifications and the accompanying Bases section to permit operation with increased Safety Relief Valve (SRV) and Safety Valve (SV) setpoint tolerance and to permit operation up to 100% of rated power with a single inoperable SRV. As shown in Attachment A, Vermont Yankee proposes to modify:

- a) Technical Specification page 18, Section 2.2.B, correction of a typographical error and to clearly identify the required primary system relief and safety valve settings, as-found tolerance ($\pm 3\%$), and as-left tolerance ($\pm 1\%$);
- b) Technical Specification page 120, Section 3.6.D.1 to allow operation up to 100% of rated power provided three of the four SRVs are operable; and,
- c) Bases page 142, Section 3.6 & 4.6 D by 1) removing the requirement for a power reduction when only three of the four SRVs are operable, and 2) correcting the discussion to indicate that with all SVs and SRVs within $\pm 3\%$ setpoint tolerance and with one inoperable SRV, the reactor coolant pressure safety limit of 1375 psig and Minimum Critical Power Ratio (MCPR) safety limit are not exceeded during the limiting overpressure transient.

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Reason for Change:

Vermont Yankee proposes to modify the Vermont Yankee Technical Specifications and the accompanying Bases section to permit operation with increased Safety Relief Valve (SRV) and Safety Valve (SV) setpoint tolerance and to permit operation up to 100% of rated power with a single inoperable SRV. The implementation of this amendment will allow a reduction in the amount of reporting associated with finding primary relief or safety valves out of tolerance and a reduction in lost generation due to an inoperable SRV.

Basis for Change:

The basis for this license amendment request is contained in the safety analysis documented in Attachment C. The safety analysis results demonstrate that all applicable acceptance criteria will be met during operation under the proposed changes. Additionally, the typographical change identified is administrative in nature and has no impact on safety.

Safety Considerations:

Attachment C documents safety analyses performed in support of the following two changes:

- 1) The setpoint tolerance of SRVs and SVs may be increased to $\pm 3\%$. As-found valve setpoints within $\pm 3\%$ of Technical Specifications are acceptable; and,
- 2) Technical Specifications currently require that reactor power be maintained $\leq 95\%$ of rated thermal power when one of the four SRVs is inoperable. The restriction in the Technical Specifications is not required.

Justification for these changes is provided by presenting the results of safety analysis for those postulated events which may challenge the SRVs or SVs. Safety analysis results demonstrate that all applicable acceptance criteria are met. From Attachment C, the applicable acceptance criteria for implementing these changes include:

- transient reactor pressure vessel pressure \leq ASME Boiler and Pressure Vessel Code limit (110% of design)
- no SV challenges during any Abnormal Operational Transient (AOT)
- no significant increase in the probability of SRV challenges
- fuel integrity remains assured by MCPR \geq the safety limit value during overpressure transients
- LOCA design basis criteria for emergency core cooling systems, containment design basis, containment heat removal, radiological releases, and LOCA induced structural loads are met
- associated structures, systems, and components remain intact during SRV discharge

Safety analysis results verify all the acceptance criteria are met provided the operating MCPR limits specified in the Core Operating Limits Report (COLR) are adjusted to reflect the effects of the changes. A hot channel analysis of the limiting Δ CPR overpressure transient, confirmed that a 0.02 increase in the operating MCPR limits bounds the combined effects of implementing both changes in the current cycle. The operating MCPR limits in COLR have already been increased for the current cycle. Appropriate operating MCPR limits for future cycles will be determined from cycle-specific safety analyses performed with the approved changes.

Current practice regarding SRV and SV setpoints is to assure $\pm 1\%$ tolerance is met as required by the ASME Boiler & Pressure Vessel Code referenced in Technical Specification Surveillance Requirement 4.6.E.2. As-left setpoints always meet the $\pm 1\%$ tolerance. Assurance of compliance with the SRV and SV setpoints required by Technical Specification 2.2.B is currently provided by establishing an as-left target setpoint 10 psi below the limits. This practice has proven to be acceptable with respect to avoiding challenges to SRVs and SVs. It also is consistent with the acceptance criteria listed above for this proposed change. Therefore, the following sequence will be followed for implementing the benefits of relaxed setpoint tolerance.

- 1) SRVs and SVs to be removed during the 1996 refueling outage will be as-found tested to within $\pm 3\%$ of the target setpoint (10 psi below the Technical Specification setpoint);
- 2) Valves to be installed during the 1996 refueling outage were previously as-left tested to within $\pm 1\%$ of the target setpoint (10 psi below the Technical Specification setpoint). These valves will be installed as is;
- 3) Valves to be removed during the 1998 refueling outage will be as-found tested within $\pm 3\%$ of the target setpoint (10 psi below the Technical Specification setpoint);
- 4) Valves to be installed during the 1998 refueling outage will be as-left tested to within $\pm 1\%$ of the Technical Specification setpoint and,
- 5) Subsequently, all SRVs and SVs will be as-found/as-left tested within $\pm 3\%/\pm 1\%$ of the Technical Specification setpoint.

This proposed change has been reviewed by the Vermont Yankee Plant Operations Review Committee (PORC) and the Vermont Yankee Nuclear Safety Audit and Review Committee (NSARC).

Significant Hazards Consideration:

The standards used to determine that a request for amendment involves no significant hazards are included in 10CFR50.92 of the Commission's Rules and Regulations. These standards state that the operation of the facility in accordance with the proposed amendment will not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the possibility of a new or different kind of accident from an accident previously evaluated, or (3) involve a significant reduction in a margin of safety. The discussion below addresses each of these criteria and demonstrates that the proposed amendment does not constitute a significant hazard.

1. The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed changes will permit operation with increased SRV and SV setpoint tolerance and permit operation up to 100% of rated power with a single inoperable SRV.

The valves are not related to the control rod system. The valves are not involved in the initiation of a Control Rod Drop Accident. The valves are part of the Reactor Vessel (RV) pressure boundary and their failure could initiate a LOCA. However, the proposed changes do not constitute a change in the design of the valves from a pressure boundary perspective. The proposed changes do not affect the probability of a LOCA initiated by valve failure. The valves are not a component, system, or structure involved in refueling operations. The valves and their as-found setpoint tolerance are not involved in the initiation of a Refueling Accident.

The design basis Main Steam Line Break is a complete severance of one main steam line outside the secondary containment. The SRVs and SVs are located inside primary containment and cannot cause a main steam line rupture outside secondary containment. The valves are not involved in the initiation of a design basis Main Steam Line Break. The probability or consequences of these accidents are not affected.

Attachment C includes an analysis to demonstrate that margin exists to SV challenges during an Abnormal Operational Transient (AOT). For this purpose a Generator Load Rejection without Bypass (GLRWOBP) was identified as the limiting AOT. The results confirm that SV challenges would not occur with an inoperable SRV at rated power. The current Technical Specification limit of 95% rated power or less with an inoperable SRV is therefore not required to prevent SV challenges during an AOT.

As discussed in Attachment C, the impact of the proposed as-found SRV setpoint tolerance increase on SRV piping/supports and discharge loads to the Torus was evaluated. A mechanical loads analysis confirmed the integrity of these components, systems, and structures during SRV discharge with the proposed changes.

Attachment C provides an evaluation of the impact of the proposed changes on the consequences of the Loss of Coolant Accident and the Main Steam Line Break. The limiting LOCA event is a break in the recirculation loop, with a break area of 0.6 ft^2 , at the pump discharge location, with a loss of one train of DC power as the single failure. For breaks in the recirculation line larger than 0.4 ft^2 , the SRVs would not be challenged. Therefore, in assessing the impact of the proposed changes on 10CFR50.46 acceptance criteria, only recirculation line breaks less than 0.4 ft^2 were reevaluated. Results show that the 0.6 ft^2 recirculation line break remains the limiting LOCA event and it is not affected. The consequences of the limiting design basis LOCA are not increased by the proposed changes. The design basis accident for containment performance is a double-ended break in the recirculation pump suction. For this size break, the SRVs are not challenged. Therefore, the proposed changes do not have any effect on the design basis accident for containment performance. The design basis accident for radioactive material releases and radiological effects is a complete severance of one main steam line outside the secondary containment. For steam line breaks outside the containment, MSIVs close and terminate radiological releases outside the containment, SRVs are not challenged until after MSIV closure and isolation. Therefore, the proposed changes do not increase the radiological consequences of the design basis Main Steam Line Break.

The SRVs and SVs are designed to mitigate the consequences of malfunctions of equipment which result in a Nuclear System pressure increase. These abnormal operational transients are defined and analyzed in Section 14.5.1 of the VY FSAR. The impact of the proposed changes on these abnormal operational transients was evaluated. Results are documented in Attachment C and show that applicable acceptance criteria are met provided operating MCPR limits as specified in the COLR are adjusted to reflect the effects of the proposed changes. A hot channel analysis of the limiting ΔCPR overpressure transient confirmed that a 0.02 increase in the operating MCPR limits bounds the combined effects of implementing the proposed changes in the current cycle. The operating MCPR limits in COLR have already been increased for the current cycle. Appropriate operating MCPR limits for future cycles will be determined from cycle-specific safety analyses performed with the approved changes.

Current practice regarding SRV setpoints is to assure $\pm 1\%$ tolerance is met as required by the ASME Boiler & Pressure Vessel Code referenced in Technical Specification Surveillance Requirement 4.6.E.2. As-left setpoints always meet the $\pm 1\%$ tolerance. The safety analysis in Attachment C demonstrates that as-found setpoints within $\pm 3\%$ are acceptable. However, valves re-installed after testing will continue, as previously, to meet $\pm 1\%$ tolerance as required by the ASME Boiler & Pressure Vessel Code. Thus, the probability of SRV actuation (and the associated risk of failure to reseal properly) is not increased by the proposed change.

2. The proposed amendment will not create the possibility of a new or different kind of accident from an accident previously evaluated.

The proposed changes will permit operation with increased Safety Relief Valve (SRV) and Safety Valve (SV) setpoint tolerance and permit operation up to 100% of rated power with a single inoperable SRV. The proposed changes:

- 1) do not constitute a change in the design of the valves;
- 2) will not cause the valve or associated systems and structures to be operated beyond their original design envelopes; and,
- 3) do not involve new plant equipment.

Therefore, this amendment does not create the possibility of a new or different kind of accident.

3. The proposed amendment will not involve a significant reduction in a margin of safety.

Technical Specification Basis 3.6 and 4.6 D identifies the minimum critical power ratio (MCPR) safety limit. Operational restraints on MCPR are placed in the COLR to assure no violation of the MCPR safety limit during AOTs. The impact of the proposed changes on MCPR limits was determined by performing a hot channel analysis for the overpressure transient which yields the largest transient drop in CPR (Δ CPR). Results are documented in Attachment C, and show that a 0.02 increase in the operating MCPR limits bounds the combined effects of the proposed changes and assures the MCPR safety limit is not violated during AOTs. The margin of safety defined by the MCPR safety limit is not reduced.

Technical Specification Basis 3.6 and 4.6 D also identifies the ASME Boiler and Pressure Vessel Code Section III-A limit which permits pressure transients up to 10% over design pressure ($110\% \times 1250 = 1375$ psig). This margin of safety is not reduced by the proposed changes. Attachment C documents new overpressure transient analysis with results that demonstrate the ASME overpressure limit of 110% of design is met. This license amendment request does not propose to reduce the margin of safety defined by the ASME Boiler & Pressure Vessel Code limit.

Based on the above discussion, we have determined that this proposed license amendment does not constitute a significant hazard as defined in 10CFR50.92(c).

Schedule for Change:

The proposed changes to the Technical Specifications and Bases will be implemented as soon as possible following receipt of NRC approval. The following sequence will be followed for implementing the benefits of increased setpoint tolerance:

- 1) SRVs and SVs to be removed during the 1996 refueling outage will be as-found tested to within $\pm 3\%$ of the target setpoint (10 psi below the Technical Specification setpoint);
- 2) Valves to be installed during the 1996 refueling outage were previously as-left tested to within $\pm 1\%$ of the target setpoint (10 psi below the Technical Specification setpoint). These valves will be installed as-is;
- 3) Valves to be removed during the 1998 refueling outage will be as-found tested within $\pm 3\%$ of the target setpoint (10 psi below the Technical Specification setpoint);
- 4) Valves to be installed during the 1998 refueling outage will be as-left tested to within $\pm 1\%$ of the Technical Specification setpoint; and,
- 5) Subsequently, all SRVs and SVs will be as-found/as-left tested within $\pm 3\%/\pm 1\%$ of the Technical Specification setpoint.

We trust that the information provided adequately supports our license amendment request, however, should you have any questions, please contact us.

Sincerely,

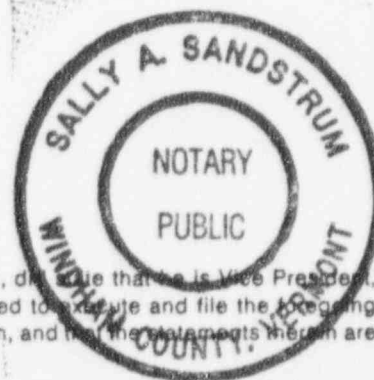
Vermont Yankee Nuclear Power Corporation

Jay K. Thayer

Jay K. Thayer
Vice President, Engineering

cc: USNRC Project Manager - VYNPS
USNRC Regional Administrator - Region 1
USNRC Resident Inspector - VYNPS

STATE OF VERMONT)
)ss
WINDHAM COUNTY)



Then personally appeared before me, Jay K. Thayer, who, being duly sworn, did state that he is Vice President, Engineering, of Vermont Yankee Nuclear Power Corporation, that he is duly authorized to execute and file the foregoing document in the name and on the behalf of Vermont Yankee Nuclear Power Corporation, and that the statements therein are true to the best of his knowledge and belief.

Sally A. Sandstrum
Sally A. Sandstrum, Notary Public
My Commission expires February 10, 1999