



SEABROOK STATION UNIT 1

Facility Operating License NPF-86
Docket No. 50-443

License Amendment Request No. 91-08
Improvements in PORV and Overpressure Protection System Availability,
Generic Letter 90-06

This License Amendment Request is submitted by New Hampshire Yankee pursuant to 10 CFR50.90. The following information is enclosed in support of this License Amendment Request:

- Section I - Introduction and Description of Proposed Changes
- Section II - Markup of Proposed Changes
- Section III - Retype of Proposed Changes
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- Section V - Determination of Significant Hazards for Proposed Changes
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Sworn and Subscribed
to before me this
16th day of October, 1991.

Tracy A. DeCredico

Notary Public

TRACY A. DeCREDICO, Notary Public
My Commission Expires October 9, 1995

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President and Chief Executive Officer

1. Introduction and Description of Proposed Changes

A. Introduction

The purpose of the proposed Technical Specification changes is to revise Specification 3/4.4.4 "Relief Valves" and its associated Bases and Specification 3/4.4.9.3 "Overpressure Protection Systems" to address the recommendations of USNRC Generic Letter (GL) 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".

On June 25, 1990, the NRC issued GL 90-06 to advise pressurized water reactor licensees of the Staff's position resulting from the resolution of Generic Issues (GIs) 70 and 94. On the basis of technical studies for GIs 70 and 94, the Staff required that the actions in the Generic Letter (including changes to Technical Specifications) be taken by licensees that use or could use power-operated relief valves (PORVs) to perform safety-related functions. New Hampshire Yankee responded to GL 90-06 on December 21, 1990 (Ref. NYN-90217 enclosed in Section VII). The NHY response to GL 90-06 describes NHY's compliance with the hardware-related and QA program-related requirements on PORVs and block valves. Additionally, the NHY response committed to submit the Technical Specification changes required by GL 90-06. GL 90-06 included model Technical Specifications for Westinghouse, CE and B&W plants utilizing two or three PORVs.

The Technical Specification models, however, did not provide for the use of Residual Heat Removal System suction relief valves for overpressure protection. Therefore, a group of seven utilities formed to develop a common approach to GL 90-06. Eight plants are affected by this effort including: Callaway, Vogtle, Comanche Peak, Millstone 3, Wolf Creek, Byron, Braidwood, and Seabrook. This group was formed due to the lack of specific guidance in GL 90-06 and a model Technical Specification for plants that have the ability to use either the PORVs or the Residual Heat Removal (RHR) suction relief valves for low-temperature overpressure protection. A joint effort was possible due to the similarity of plant types and existing Technical Specifications. All the plants are Westinghouse pressurized water reactors which utilize the PORVs and RHR suction relief valves for low-temperature overpressure protection. The generic letter was reviewed by the group and a proposed Technical Specification developed that reflects the use of either the PORVs or the RHR suction relief valves or a combination thereof.

B. Description of Proposed Changes

The proposed Technical Specifications changes are consistent with GL 90-06. GL 90-06 necessitates changes to Seabrook Station Technical Specification 3/4.4.4 "Relief Valves" and its associated Bases and Technical Specification 3/4.4.9.3 "Overpressure Protection Systems" and its associated Bases. The changes to Technical Specification 3/4.4.4 are intended to enhance the availability of the PORVs for RCS transient mitigation. By maintaining power to closed block valves when the PORVs are exhibiting excessive seat leakage, the block valves can be readily opened to afford use of the PORVs in mitigating a transient. If the block valve(s) are inoperable, the revised ACTION d. provides adequate measures to assure that a PORV will not become stuck open when a block valve is inoperable yet maintains the ability to use the PORVs for transient mitigation.

The changes to Technical Specification 3/4.4.9.3 provide enhanced operational flexibility through the use of a PORV in combination with an RHR suction relief valve for low temperature overpressurization protection. Each of these relief valves, alone is capable of mitigating a design basis mass or heat addition transient. The revisions to ACTION b. reduce the allowed outage time for one of the two required overpressure protection devices from 7 days to 24 hours when in MODE 5 or 6, because the NRC has determined that the potential for an overpressure transient is highest in these MODES.

Technical Specification 3/4.4.4 and Associated Bases: "Relief Valves"

The proposed changes to Technical Specification 3/4.4.4 requested by GL 90-06 are described below:

1. The Limiting Condition for Operation (LCO) statement is being clarified by replacing "All" with "Both" as the Seabrook design includes two PORVs.
2. ACTION a. is being revised to include the requirement to maintain power to closed block valve(s) because removal of power would render the block valve(s) inoperable and the requirements of ACTION d. would apply. Power is maintained to the block valve(s) so that it is operable and may be subsequently opened to allow the PORV to be used to control Reactor Coolant System (RCS) pressure. Closure of the block valve(s) establishes RCS pressure boundary integrity for a PORV that is exhibiting excessive seat leakage. RCS pressure boundary integrity takes priority over the capability of the PORV to mitigate an overpressure event. The NRC noted in GL 90-06 that operation with the block valve(s) closed with power maintained to the block valve(s) is only intended to permit operation of the plant for a limited period of time not to exceed the next refueling outage so that maintenance can be performed on the PORVs to eliminate the seat leakage condition.
3. ACTIONS a., b., and c. are being revised to eliminate the requirement to take the plant to COLD SHUTDOWN. This revision is being made because the APPLICABILITY requirements of the LCO do not extend past the HOT STANDBY MODE.
4. ACTION c. is being revised to provide consistency with ACTION b. Currently, ACTION c. requires that with two inoperable PORVs, due to causes other than excessive seat leakage, both PORVs must be restored to OPERABLE status within one hour or a shutdown must be commenced. Currently, ACTION c. does not credit the restoration of one PORV to OPERABLE status within one hour. If one PORV is restored to a OPERABLE status within one hour, the requirements of ACTION b. should apply which provides 72 hours to restore an inoperable PORV.
5. ACTION d. is being revised to establish remedial measures that are consistent with the function of the block valves. The primary function of the block valves is the isolation of a stuck-open PORV. If the block valve(s) cannot be restored to operable status within 1 hour, the remedial action is to place the PORV in manual control (i.e. the control switch in the "CLOSE" position) to preclude its automatic opening for an overpressure event and to avoid the potential for a stuck-open PORV at a time when the block valve is inoperable. The time allowed to restore the block valve(s) to operable status is the same as the remedial action time limits for inoperable PORVs per ACTIONS b. and c. since the PORVs are not capable of automatic mitigation of an overpressure event when placed in manual control. ACTION d. does not specify closure of the block valves as is required in ACTIONS b. and c. because such action may not be possible when the block valve is inoperable. Likewise, ACTION d. does

not specify the closure of the PORV, because it would not likely be open, nor does it specify the removal of power from the PORV. When the block valve is inoperable, placing the PORV in manual control is sufficient to preclude the potential for having a stuck-open PORV that could not be isolated because of an inoperable block valve.

6. Surveillance Requirement 4.4.4.1.b has been revised to require that PORVs be cycled only during MODE 3 or 4. The NRC specified in GL 90-06 that stroke testing of the PORVs should not be performed during power operation. GL 90-06 requires that the PORVs be cycled in MODE 3 and MODE 4 to simulate the temperature and environmental effects on the PORVs.
7. The change to Bases page B 3/4 4-2 clarifies PORV operability requirements in MODE 1, 2 and 3. Technical Specification 3/4.4.4 requires that if one PORV is inoperable due to causes other than excessive seat leakage, within one hour the PORV must be restored to operable status or the associated block valve must be closed with its power removed. A PORV is considered inoperable if it is not capable of performing its specified function. As noted in the Bases revision, no credit for automatic PORV operation is taken in the FSAR analysis for MODE 1, 2 and 3 transients, and the PORVs can be considered OPERABLE in either the manual or automatic mode. This clarification is added due to the potential situation where an automatic signal to the PORVs is inoperable, but the PORV is mechanically functional. Since the PORV is still mechanically functional, it is OPERABLE and therefore it is not necessary to close and remove power from the block valve. Thus the PORV remains in a condition where it can be manually opened from the control room if required. This clarification is consistent with the OPERABILITY requirements for the PORVs in MODE 1, 2 and 3.

Technical Specification 3/4.4.9.3 and Associated Bases: "Overpressure Protection Systems"

The proposed changes to Technical Specification 3/4.4.9.3 are described below:

1. The LCO statement is being modified to require that at least two overpressure protection devices must be OPERABLE. That is, two PORVs or two RHR suction relief valves or one PORV and one RHR suction relief valve must be operable when cold overpressure protection is required. The NRC found acceptable the use of the RHR suction relief valves for low-temperature overpressure protection in NUREG-0896, "Safety Evaluation Report related to the operation of Seabrook Station, Units 1 and 2". Seabrook Station overpressure protection analyses demonstrate that each RHR suction relief valve provides sufficient relief capacity to prevent exceeding 10 CFR Appendix G limits during the overpressurization design bases mass addition event of one charging pump or one safety injection pump operating at full flow with the RCS water solid and loss of letdown capability. The analyses also show each RHR suction relief valve will prevent exceeding the Appendix G limits during the overpressurization design bases heat addition event of a reactor coolant pump start with the steam generator secondary temperature 50°F warmer than RCS temperature.

It is also noteworthy that the NRC has issued License Amendment No. 3 allowing the deletion of the Residual Heat Removal System suction isolation valves autoclosure interlock (ACI) function. NHY has implemented the RHR ACI deletion design change during the current refueling outage. This modification enhances RHR system reliability and overpressure protection system availability by precluding spurious RHR suction valve closures caused by potential malfunctions of the ACI circuit. The combination

of PORVs and RHR suction relief valves provides an equivalent level of overpressure protection with no degradation in the level of safety. Added assurance of overpressure protection system availability is provided by reducing the AOT for an inoperable PORV or RHR suction relief valve from 7 days to 24 hours in MODE 5 and 6. The increased availability of the overpressure protection system provides an increase in the overall protection of the public health and safety.

2. ACTION a. (as renumbered) is revised to clarify that it is only applicable in MODE 4. The allowed outage time (AOT) for an overpressure protection device in MODE 5 and MODE 6 is proposed to be reduced as discussed below. ACTION a. is also reformatted to facilitate use by the operators.
3. ACTION b. is added to reduce the AOT for one of the two required overpressure protection devices to 24 hours in MODE 5 or 6. The NRC has considered the conditions under which a low-temperature overpressure transient is most likely to occur. While low-temperature overpressure protection is required for all shutdown modes, the most vulnerable period of time was found to be MODE 5 with the reactor coolant temperature less than or equal to 200°F, especially when water solid, based on the detailed evaluation of operating reactor experiences performed in support of Generic Issue 94. The NRC Staff concluded that the low-temperature overpressure protection system performs a safety-related function and inoperable overpressure protection equipment should be restored to an operable status in a shorter period of time. The current 7-day AOT is considered by the NRC to be too long under certain conditions. The NRC has concluded that the AOT should be reduced to 24 hours when operating MODE 5 or 6 when the potential for an overpressure transient is highest.
4. ACTION c. (as renumbered) is reformatted to facilitate use by the operators.
5. Surveillance Requirement 4.4.9.3.1 is revised pursuant to GL 90-06 to simplify the Surveillance Requirement by "removing requirements that exist because of the general requirements applicable to all surveillance requirements as specified in Section 4.0 of the Technical Specifications." Technical Specification 4.0.4 has the effect of requiring that the ANALOG CHANNEL OPERATIONAL TEST (ACOT) required by Surveillance Requirement 4.4.9.3.1 be performed before the PORV is deemed OPERABLE for cold overpressure protection. It is not necessary that the surveillance explicitly state that the ACOT is required within 31 days prior to entering a condition in which the PORV is required OPERABLE. Additionally, Surveillance Requirement 4.4.9.3.1 has been revised for consistency with Surveillance Requirements 4.4.9.3.2 and 4.4.9.3.3.
6. The change to Bases page B 3/4 4-15 allows for the combination of a PORV and RHR suction relief valve for RCS cold overpressure protection, consistent with the changes to Technical Specification 3/4.4.9.3.

11. Markup of Proposed Changes

See attached markup of proposed changes to Technical Specifications.