



**Consumers
Power**

**POWERING
MICHIGAN'S PROGRESS**

Kenneth W Berry
Director
Nuclear Licensing

General Offices: 1945 West Parnall Road, Jackson, MI 49201 • (517) 788-1636

September 12, 1989

Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

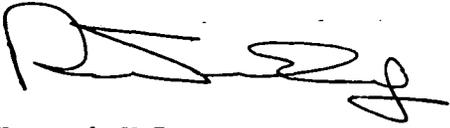
DOCKET 50-255 - LICENSE DPR-20 - PALISADES PLANT -
TECHNICAL SPECIFICATION CHANGE REQUEST - LOW TEMPERATURE
OVERPRESSURE PROTECTION (LTOP) - VARIABLE SETPOINT (TAC NO. 72889)

The attached proposed change to the Palisades Technical Specifications is necessary to permit use of a variable Power Operated Relief Valve (PORV) setpoint for Low Temperature Overpressure Protection (LTOP) and thus increase the operating margin during plant heatup and cooldown.

An ancillary improvement is increasing the temperature range in which the HPSI system is available to inject cooling water in the event of a loss of primary system integrity. We plan to install the variable LTOP (VLTOP) control during the imminent fall 1989 maintenance outage and, at the same time, install larger PORVs and Block Valves. The larger valves increase the flow capacity to enhance once-through-cooling capability and allow HPSI operability at lower temperatures.

The Palisades Fall 1989 Maintenance Outage is planned to begin on October 1, 1989 and end on November 15, 1989. We plan to restore the Primary Coolant System pressure boundary on or about November 1, 1989. Therefore we request that approval of this Change Request be issued before November 1, 1989. If for some unforeseen reason this project must be delayed until the next outage of sufficient duration, we request the effective date of this change coincide with the plant startup following the installation outage.

Attachment I contains proposed Technical Specification pages as they will appear when this request is approved. Attachment II contains the existing Technical Specification pages marked up to reflect the proposed changes.


for Kenneth W Berry
Director, Nuclear Licensing

CC Administrator, Region III, NRC
NRC Resident Inspector - Palisades

Attachment

OC0889-0101-MD01-NL04


8909190013 890912
FDR ADOCK 05000255
P PDC

CONSUMERS POWER COMPANY
Docket 50-255
Request for Change to the Technical Specifications
License DPR-20

For the reasons hereinafter set forth, it is requested that the Technical Specifications contained in the Provisional Operating License DPR-20, Docket 50-255, issued to Consumers Power Company on October 16, 1972, for the Palisades Plant be changed as described in Section I below:

I. Changes

- A. Section 3.1.1.h is changed to specify the necessary precautions to be taken prior to initiating forced circulation when the secondary temperature is higher than the PCS temperature.
- B. The Basis for Section 3.1 has been changed to explain the new requirements of Section 3.1.1.h.
- C. The heatup and cooldown limits in Section 3.1.2 have been changed in accordance with the new limits of Figures 3-1 and 3-2. The same rates for heatup or cooldown with shutdown cooling isolated are specified to simplify operational requirements. The heating rate with shutdown cooling MOV3015 and MOV3016 OPEN is limited to ensure not exceeding the capacity of the shutdown cooling system relief valves. The maximum pressurizer heatup rate has been changed to 200°F per hour with shutdown cooling isolated, and 60°F per hour with shutdown cooling MOV3015 and MOV 3016 OPEN.
- D. Figures 3-1, 3-2, and 3-3 have been revised by using refined calculation methods defined in Regulatory Guide 1.99 Revision 2 to allow higher pressures at a given temperature.
- E. The Basis for Section 3.1.2 has been changed to describe the method of calculation used for Figures 3-1, 3-2 and 3-3.
- F. An explanation of the method for calculating the hourly average cooldown rate has been added to the Basis of Section 3.1.2.
- G. Section 3.1.8 has been changed and Figure 3-4 added to allow the use of a variable PORV setpoint for LTOP. Section 3.1.8 has also been changed to reflect protection of the primary coolant system only. Protection for the shutdown cooling system is afforded by its installed relief valves, and by the limitations of sections 3.1.1.h, 3.1.2.a & c, and 3.3.2 g.
- H. Section 3.1.8.c has been deleted since a dedicated operator is not required with a variable PORV setpoint.
- I. Sections a and b of the action requirement of Section 3.1.8 have been changed to reflect the operation of the new PORV. (The valve, not only the valve pilot as with the existing valves, can be electrically held OPEN.)

- J. A paragraph which explains the curve in Figure 3-4 has been added to the Basis for Section 3.1.8. In addition, a method of opening the PORVs to provide a vent path is explained.
- K. Section 3.3.2.g has been completely revised to take advantage of the higher pressure limits allowed by the new PORV setpoints specified in proposed Section 3.1.8 (see page changes).
- L. The Basis of Section 3.3 has been changed to reflect the changes to Section 3.3.2.g. The paragraph explaining the need for a dedicated operator has been deleted.
- M. Section 4.1.1.c has been changed to delete the word "pilot" because the new PORVs can be held open electrically.
- N. Section 4.6.1.b has been changed to coincide with the changes to Section 3.1.8 (see page changes).
- O. The last paragraph of the Basis for Section 4.6 has been changed to conform with the conditions required by the proposed Section 3.1.8.

II. Discussion

Installing a variable PORV setpoint control for the Palisades Plant is a major goal in accomplishing the objective of providing a larger operating margin during heatup and cooldown. Concurrent with this effort, other programs to increase reactor vessel (RV) life, comply with the block valve criteria of NUREG-0737, and decrease the probability of core melt risk outliers have resulted in actions which have resulted in less fluence for certain areas of the RV (using twice burned fuel and metallic rods in the fuel adjacent to longitudinal welds), installation of new PORV block valves, and installation of larger block valves and PORVs.

Recognizing the appropriate fluence accumulation rates for longitudinal and circumferential welds, new low leakage fuel management, and using refined calculational methods have resulted in new pressure/temperature limits shown in Figures 3-1, 3-2, and 3-3. Changes to the calculation method involved:

- (1) Using Regulatory Guide 1.99 Revision 2 instead of Regulatory Guide 1.99 Draft Revision 2 resulted in calculating the ΔT_{NDT} temperature shift at 1/4 t and 3/4 t by using the fluence attenuation at 1/4 t and 3/4 t instead of using the ΔT_{NDT} surface attenuation at 1/4 t and 3/4 t.
- (2) The stress intensity factor coefficients were reevaluated using the vessel radii at 1/4 t and 3/4 t.
- (3) Temperature and pressure measurement inaccuracy was not included.

Installation of larger PORVs and block valves will reduce the pressure overshoot when postulating inadvertent mass injection by the charging and HPSI systems and the overall result will be (1) to permit HPSI operability down to 230°F, (2) permit initiation of forced PCS

circulation under limited conditions when the steam generator temperature is higher than the PCS cold leg temperature, and (3) provide ample once-through-cooling when one PORV is inoperable.

The existing LTOP limits of Section 3.1.8 result from limitations set by the pressure limit of the Shutdown Cooling System and existing instrumentation capability. Protection for the Shutdown Cooling (SDC) System by the new PORVs will not be required, since limits proposed for sections 3.1.1 h, 3.1.2 a and c, and 3.3.2 g. will ensure that challenges to the SDC System pressure boundary are within the capacity of the SDC System Relief valves. The setpoints of the SDC System relief valves will be adjusted as necessary to provide the necessary overpressure protection without reliance on the new PORVs. New instrumentation which can be programmed to open the PORVs at a large number of pressure/temperature combinations will be installed to permit the higher PORV setpoints in proposed Section 3.1.8. Simultaneous installation of the new variable LTOP instrumentation and the larger PORV flowpath will result in a consolidated training module for operating personnel.

Figure 3-4 in Section 3.1.8 shows the maximum PORV pressure setpoint at various temperatures. The values on that curve are the 10CFR50 Appendix G values minus analyzed pressure overshoot. The actual PORV setpoints will be below and to the right of the curve to allow for instrument inaccuracy, setpoint error and measurement error.

Proposed Section 3.3.2.g retains requirements that recognize the limitations of the Shutdown Cooling (SDC) System pressure boundary. When the SDC system is not isolated from the PCS, HPSI operability is not allowed. However when the SDC system is isolated, full HPSI operability is allowed down to 230°F and both HPSI trains are required to be operable above 325°F.

Analysis of No Significant Hazards Consideration

Consumers Power Company finds that activities associated with this Change Request involve no significant hazards, and, accordingly, a no significant hazards determination per 10CFR50.92(c) is justified. The following evaluation supports that finding.

Evaluation

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

There are three previously evaluated conditions which could result in the 10CFR50 Appendix G limits being exceeded. They are mass injection by the charging and/or HPSI systems or a heat injection by initiating forced circulation when the steam generator temperature is higher than the PCS cold leg temperature. These conditions have been postulated and analyzed under the conditions proposed by this Change Request and under no conditions will the Appendix G limits (Fig. 3-1, 3-2, and 3-3) be exceeded. Therefore the consequences of an accident previously evaluated are not increased. The HPSI operability

range has been increased to provide additional low temperature ECCS availability. If inadvertent HPSI pump operation would occur, Appendix G limits would not be violated. Therefore there is no increase in the probability or consequences of an accident previously evaluated.

2. Create the possibility of a new or different kind of accident from any accident previously evaluated.

This proposed change only increases allowable PCS pressure/temperature relationships in specified temperature ranges and allows HPSI operability over a larger temperature range. Therefore it does not create the possibility of a new or different kind of accident.

3. Involve a significant reduction in a margin of safety.

The margin of safety is the difference between the stress at which the PCS pressure boundary would fail and the stress permitted by 10CFR50 Appendix G. This proposed specification change does not change the stress allowed by 10CFR50 Appendix G and ensures that the stress allowed by 10CFR50 Appendix G will not be exceeded. Therefore, it does not involve a reduction in the margin of safety.

III. Conclusion

The Palisades Plant Review Committee has reviewed this Technical Specification Change Request and has determined that this change does not involve an unreviewed safety question and therefore involves no significant hazards consideration. This change has been reviewed by the Nuclear Safety Services Department. A copy of this Technical Specification Change Request has been sent to the State of Michigan official designated to receive such Amendments to the Operating License.

CONSUMERS POWER COMPANY

To the best of my knowledge, information and belief, the contents of this submittal are truthful and complete.

By David P. Hoffman 9/12/89
David P Hoffman, Vice President
Nuclear Operations

Sworn and subscribed to before me this 12th day of October 1989.

Elaine E. Buehrer
Elaine E Buehrer, Notary Public
Jackson County, Michigan

My commission expires October 31, 1989