



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

CAROLINA POWER & LIGHT COMPANY, et al.

DOCKET NO. 50-400

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 23  
License No. NPF-63

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Carolina Power & Light Company, (the licensee), dated September 10, 1990, as supplemented November 20, 1990, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications, as indicated in the attachment to this license amendment; and paragraph 2.C.(2) of Facility Operating License No. NPF-63 is hereby amended to read as follows:

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(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, as revised through Amendment No. 23, are hereby incorporated into this license. Carolina Power & Light Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION  
Original Signed By:

Elinor G. Adensam, Director  
Project Directorate II-1  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: December 26, 1990

SUBJECT TO INCLUDING  
STATEMENT REGARDING  
HOW TO SUPP. INFO  
IN SAFETY EVAL. OR  
SHOULD MEMO.

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ATTACHMENT TO LICENSE AMENDMENT NO. 23

FACILITY OPERATING LICENSE NO. NPF-63

DOCKET NO. 50-400

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised areas are indicated by marginal lines.

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# REACTOR COOLANT SYSTEM COOLDOWN LIMITATIONS APPLICABLE UP TO 5 EFY

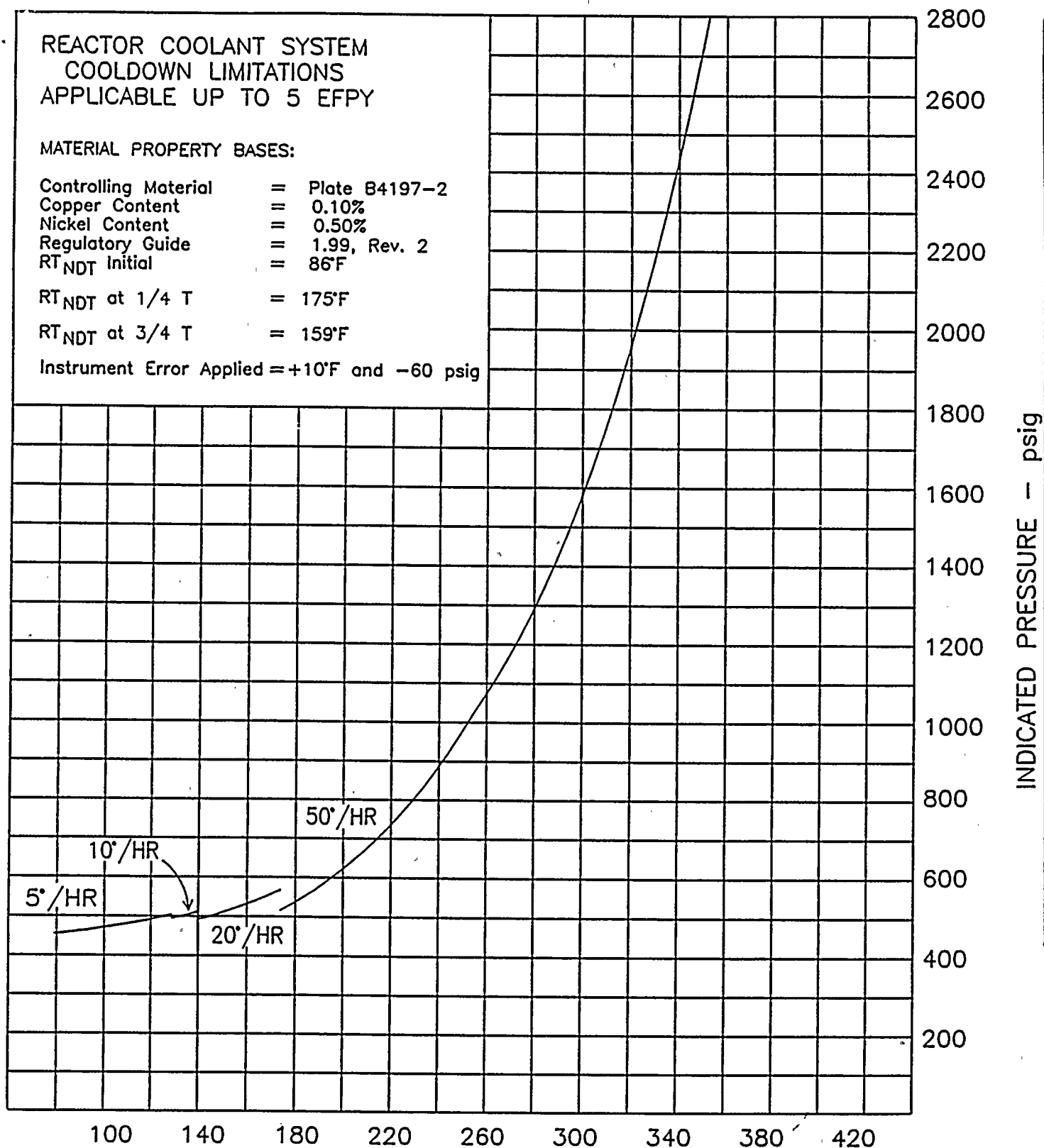
## MATERIAL PROPERTY BASES:

Controlling Material = Plate B4197-2  
Copper Content = 0.10%  
Nickel Content = 0.50%  
Regulatory Guide = 1.99, Rev. 2  
RT<sub>NDT</sub> Initial = 86°F

RT<sub>NDT</sub> at 1/4 T = 175°F

RT<sub>NDT</sub> at 3/4 T = 159°F

Instrument Error Applied = +10°F and -60 psig



INDICATED TEMPERATURE — DEGREES °F

FIGURE 3.4-2

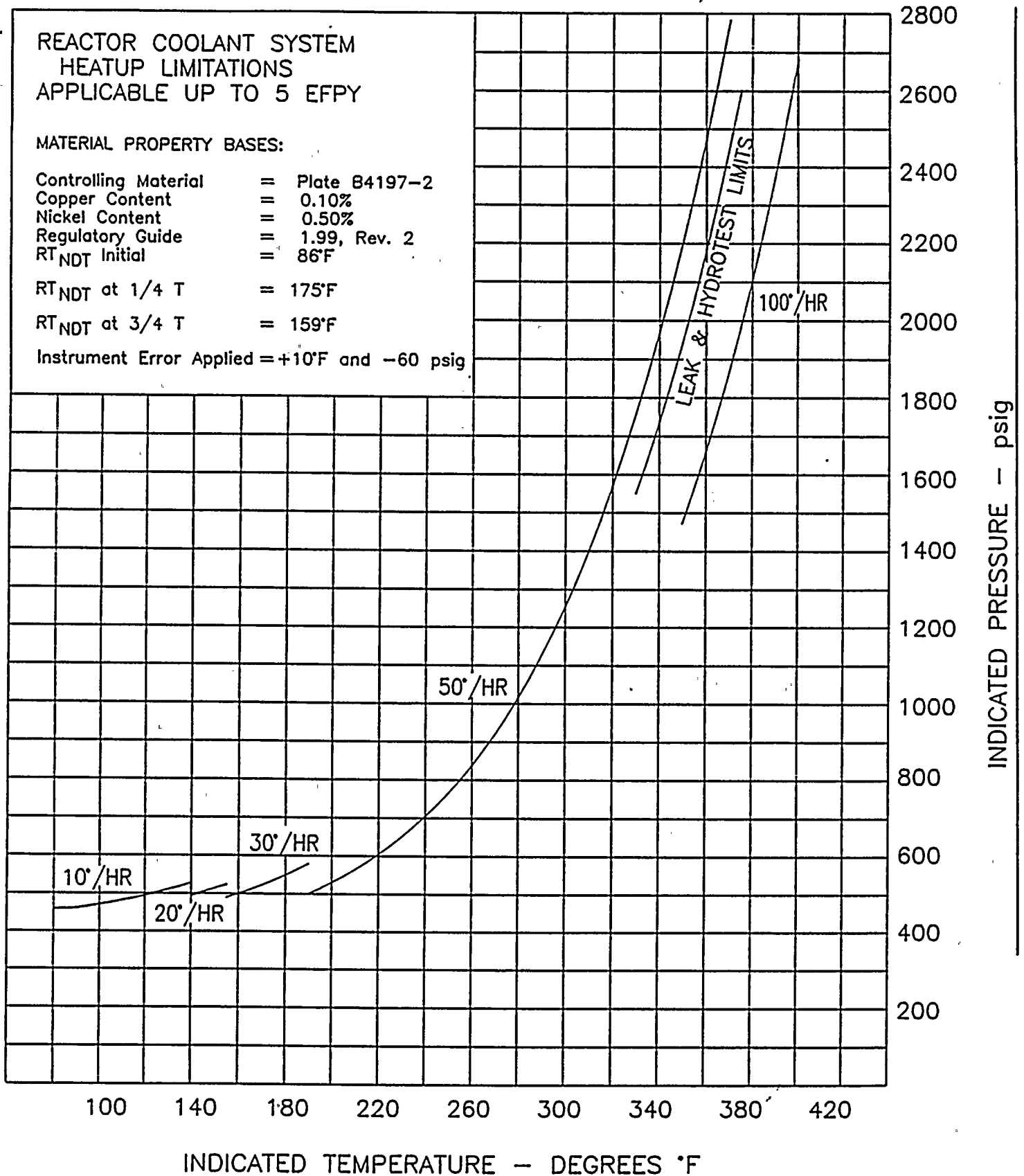
REACTOR COOLANT SYSTEM

COOLDOWN LIMITATIONS — APPLICABLE UP TO 5 EFY

REACTOR COOLANT SYSTEM  
HEATUP LIMITATIONS  
APPLICABLE UP TO 5 EFY

MATERIAL PROPERTY BASES:

Controlling Material = Plate 84197-2  
Copper Content = 0.10%  
Nickel Content = 0.50%  
Regulatory Guide = 1.99, Rev. 2  
RT<sub>NDT</sub> Initial = 86°F  
RT<sub>NDT</sub> at 1/4 T = 175°F  
RT<sub>NDT</sub> at 3/4 T = 159°F  
Instrument Error Applied = +10°F and -60 psig



INDICATED TEMPERATURE — DEGREES °F

FIGURE 3.4-3

REACTOR COOLANT SYSTEM  
HEATUP LIMITATIONS — APPLICABLE UP TO 5 EFY

TABLE 4.4-6

MAXIMUM COOLDOWN AND HEATUP RATES  
FOR MODES 4, 5, AND 6 (WITH REACTOR VESSEL HEAD ON)

COOLDOWN RATES

<u>TEMPERATURE*</u>	<u>COOLDOWN IN ANY 1 HOUR PERIOD**</u>
350-175°F	50°F
175-140°F	20°F
140-130°F	10°F
< 130°F	5°F

HEATUP RATES

<u>TEMPERATURE*</u>	<u>HEATUP IN ANY 1 HOUR PERIOD**</u>
< 140°F	10°F
140-155°F	20°F
155-190°F	30°F
190-350°F	50°F

\*Temperature range used should be based on the lowest RCS cold leg value.

\*\*Temperature used should be based on lowest RCS cold leg value except when no RCP is in operation; then use an operating RHR heat exchanger outlet temperature.



## REACTOR COOLANT SYSTEM

### OVERPRESSURE PROTECTION SYSTEMS

#### LIMITING CONDITION FOR OPERATION

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3.4.9.4 At least one of the following Overpressure Protection Systems shall be OPERABLE:

- a. The Reactor Coolant System (RCS) depressurized with an RCS vent of greater than or equal to 2.9 square inches, or
- \* b. Two power-operated relief valves (PORVs) with setpoints which do not exceed the limits established in Figure 3.4-4.

APPLICABILITY: MODE 4 when the temperature of any RCS cold leg is less than or equal to 325°F, MODE 5 and MODE 6 with the reactor vessel head on.

#### ACTION:

- a. With one PORV inoperable, restore the inoperable PORV to OPERABLE status within 7 days or depressurize and vent the RCS through at least a 2.9 square inch vent within the next 8 hours.
- b. With both PORVs inoperable, depressurize and vent the RCS through at least a 2.9 square inch vent within 8 hours.
- c. In the event either the PORVs or the RCS vent(s) are used to mitigate an RCS pressure transient, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 30 days. The report shall describe the circumstances initiating the transient, the effect of the PORVs or RCS vent(s) on the transient, and any corrective action necessary to prevent recurrence.
- d. The provisions of Specification 3.0.4 are not applicable.

#### SURVEILLANCE REQUIREMENTS

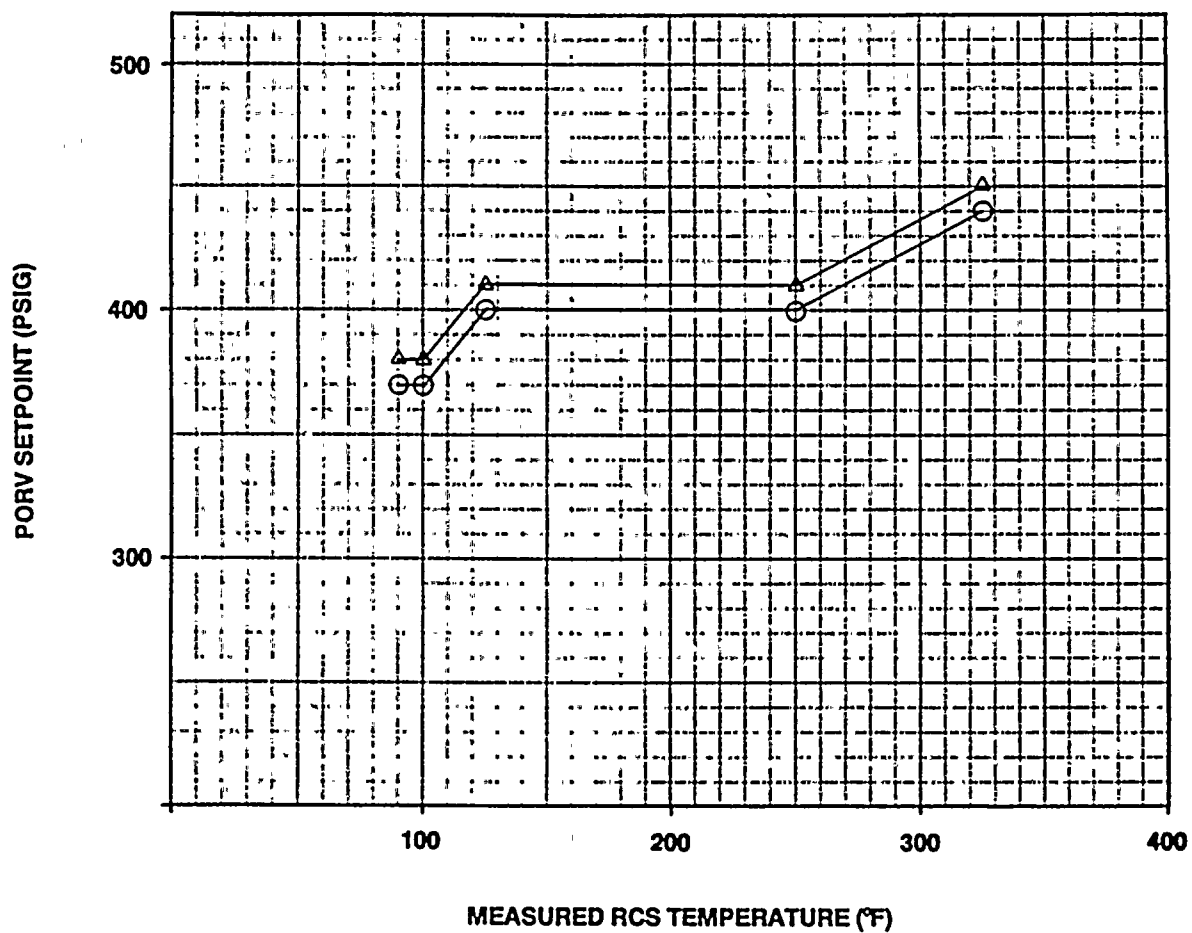
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4.4.9.4.1 Each PORV shall be demonstrated OPERABLE by:

- a. Performance of an ANALOG CHANNEL OPERATIONAL TEST on the PORV actuation channel, but excluding valve operation, within 31 days prior to entering a condition in which the PORV is required OPERABLE and at least once per 31 days thereafter when the PORV is required OPERABLE;
- b. Performance of a CHANNEL CALIBRATION on the PORV actuation channel at least once per 18 months; and
- c. Verifying the PORV isolation valve is open at least once per 72 hours when the PORV is being used for overpressure protection.

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\* Credit may only be taken for the setpoints when the RCS cold leg temperature  $\geq 90^\circ\text{F}$ .



RCS TEMP OF	LOW PORV * PSIG ○	HIGH PORV * PSIG △
90	370	380
100	370	380
125	400	410
250	400	410
300	427	437
325	440	450

\* VALUES BASED ON 5 EFPY REACTOR VESSEL DATA AND  
CONTAINS MARGINS OF -10°F AND +60 PSIG FOR POSSIBLE  
INSTRUMENT ERROR

FIGURE 3.4-4

MAXIMUM ALLOWED PORV SETPOINT FOR THE LOW  
TEMPERATURE OVERPRESSURE SYSTEM

## REACTOR COOLANT SYSTEM

### BASES

#### PRESSURE/TEMPERATURE LIMITS (Continued)

- b. Figures 3.4-2 and 3.4-3 define limits to assure prevention of non-ductile failure only. For normal operation, other inherent plant characteristics, e.g., pump heat addition and pressurizer heater capacity, may limit the heatup and cooldown rates that can be achieved over certain pressure-temperature ranges.
2. These limit lines shall be calculated periodically using methods provided below,
3. The secondary side of the steam generator must not be pressurized above 200 psig if the temperature of the steam generator is below 70°F,
4. The pressurizer heatup and cooldown rates shall not exceed 100°F/h and 200°F/h, respectively. The spray shall not be used if the temperature difference between the pressurizer and the spray fluid is greater than 625°F, and
5. System preservice hydrotests and inservice leak and hydrotests shall be performed at pressures in accordance with the requirements of ASME Boiler and Pressure Vessel Code, Section XI.

The fracture toughness testing of the ferritic materials in the reactor vessel was performed in accordance with the 1971 Winter Addenda to Section III of the ASME Boiler and Pressure Vessel Code. These properties are then evaluated in accordance with the NRC Standard Review Plan.

Heatup and cooldown limit curves are calculated using the most limiting value of the nil-ductility reference temperature,  $RT_{NDT}$ , at the end of 5 effective full power years (EFPY) of service life. The service life period is chosen such that the limiting  $RT_{NDT}$  at the 1/4T location in the core region is greater than the  $RT_{NDT}$  of the limiting unirradiated material. The selection of such a limiting  $RT_{NDT}$  assures that all components in the Reactor Coolant System will be operated conservatively in accordance with applicable Code requirements.

The reactor vessel materials have been tested to determine their initial  $RT_{NDT}$ ; the results of these tests are shown in Table B 3/4.4-1. Reactor operation and resultant fast neutron (E greater than 1 MeV) irradiation can cause an increase in the  $RT_{NDT}$ . Therefore, an adjusted reference temperature, based upon the fluence, copper content, and nickel content of the material in question, can be predicted using Figure B 3/4.4-1 and the value of  $\Delta RT_{NDT}$  computed by Regulatory Guide 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel Materials."

