



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

CAROLINA POWER AND LIGHT COMPANY

DOCKET NO. 50-261

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 61
License No. DPR-23

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Carolina Power and Light Company (the licensee) dated November 11, 1981, 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.

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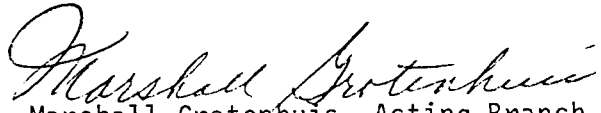
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-23 is hereby amended to read as follows:

(B) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 61, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. Revise paragraph 3.I.a of Facility Operating License No. DPR-23 to read as follows:
 - a. A primary to secondary pressure test at approximately 1825 psi differential shall be performed after operation at power levels such that estimated corrosion is equivalent to that of 24 effective full power days operation as shown in figure 4.3.3 in Attachment B of CP&L's letter of August 27, 1981. A period of seven additional calendar days is permitted for flexibility for scheduling the necessary test. This test shall be repeated after each interval of operation such that the estimated corrosion is equivalent to that of 241 effective full power corrosion equivalent days operation until the end of cycle 8 operation.
4. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION


Marshall Grotenhuis, Acting Branch Chief
Operating Reactors Branch No. 1
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: November 13, 1981

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 61 TO FACILITY OPERATING LICENSE NO. DPR-23

DOCKET NO. 50-261

Revise Appendix A as follows:

Remove Pages

2.3-1
2.3-2
2.3-3
3.5-7
3.5-7a
3.5-10a

Insert Pages

2.3-1
2.3-2
2.3-3
3.5-7
3.5-7a
3.5-10a

2.3 LIMITING SAFETY SYSTEM SETTINGS, PROTECTIVE INSTRUMENTATION

Applicability

Applies to trip settings for instruments monitoring reactor power and reactor coolant pressure, temperature, and flow and pressurizer level.

Objective

To provide for automatic protective action in the event that the principal process variables approach a safety limit.

Specification

2.3.1 Protective instrumentation settings for reactor trip shall be as follows:

2.3.1.1 Startup protection

- a. High flux, power range (low set point)
 <25% of rated power.

2.3.1.2 Core protection

- a. High flux, power range (high set point)
 <109% of rated power.*
- b. High pressurizer pressure <2385 psig.
- c. Low pressurizer pressure >1835 psig.

*This setting limit shall be less than or equal to 92% of rated power when operating under the reduced temperature conditions described in the November 11, 1981 license submittal.

d. Overtemperature ΔT

$$\leq \Delta T_o \{K_1 - K_2 (T - 575.4) + K_3 (P - 2235) - f(\Delta I)\}^*$$

where:

ΔT_o = Indicated ΔT at rated power, °F

T = Average temperature, °F

P = Pressurizer pressure, psig

K_1 = 1.1619

K_2 = 0.01035

K_3 = 0.0007978

and $f(\Delta I)$ is a function of the indicated difference between top and bottom detectors of the power-range nuclear ion chambers; with gains to be selected based on measured instrument response during plant startup tests such that:

- (1) For $(q_t - q_b)$ within +12% and -17% where q_t and q_b are percent power in the top and bottom halves of the core respectively, and $q_t + q_b$ is total core power in percent of rated power, $f(\Delta I) = 0$. For every 2.4% below rated power level, the permissible positive flux difference range is extended by +1 percent. For every 2.4% below rated power level, the permissible negative flux difference range is extended by -1 percent.
- (2) For each percent that the magnitude of $(q_t - q_b)$ exceeds +12% in a positive direction, the ΔT trip setpoint shall be automatically reduced by 2.4% of the value of ΔT at rated power.
- (3) For each percent that the magnitude of $(q_t - q_b)$ exceeds -17%, the ΔT trip setpoint shall be automatically reduced by 2.4% of the value of ΔT at rated power.

*When operating under the reduced temperature conditions described in the November 11, 1981 license submittal, replace the number 575.4 with 537.9 in the overtemperature ΔT calculation.

e. Overpower ΔT

$$\leq \Delta T_o [K_4 - K_5 \frac{dT}{dt} - K_6 (T - T') - f(\Delta I)]$$

where:

ΔT_o = Indicated ΔT at rated power, °F

T = Average temperature, °F

T' = Indicated average temperature at nominal conditions and rated power, °F*

K_4 = 1.07

K_5 = $\begin{cases} 0 & \text{for decreasing average temperature} \\ 0.2 & \text{seconds per } ^\circ\text{F for increasing average temperature} \end{cases}$

K_6 = 0.002235 for $T > T'$; K_6 = 0 for $T < T'$

f(ΔI) = as defined in d. above.

f. Low reactor coolant loop flow $\geq 90\%$ of normal indicated flow

g. Low reactor coolant pump frequency ≥ 57.5 Hz

h. Under voltage $\geq 70\%$ of normal voltage.

2.3.1.3 Other Reactor Trips

a. High pressurizer water level $\leq 92\%$ of span

b. Low-low steam generator water level $\geq 14\%$ of narrow range instrument span.

2.3.2 Protective instrumentation settings for reactor trip interlocks shall be as follows:

2.3.2.1 The low pressurizer pressure trip, high pressurizer level trip, and the low reactor coolant flow trip (for two or more loops) may be bypassed below 10% of rated power.

2.3.2.2 The single-loop-loss-of-flow trip may be bypassed below 45% of rated power.

*The value of T' for nominal conditions and rated power is 575.4°F. When operating under the reduced temperature conditions described in the November 11, 1981 license submittal, replace the number 575.4 with 537.9 in the overpower ΔT calculation.

TABLE 3.5-1

ENGINEERED SAFETY FEATURE SYSTEM INITIATION INSTRUMENT SETTING LIMITS

| <u>NO.</u> | <u>FUNCTIONAL UNIT</u> | <u>CHANNEL ACTION</u> | <u>SETTING LIMIT</u> |
|------------|---|---|---|
| 1. | High Containment Pressure (HI Level) | Safety Injection* | ≤ 5 psig |
| 2. | High Containment Pressure (HI-HI Level) | a. Containment Spray** b. Steam Line Isolation | ≤ 25 psig |
| 3. | Pressurizer Low Pressure | Safety Injection* | ≥ 1700 psig |
| 4. | High Differential Pressure Between any Steam Line and the Steam Line Header | Safety Injection* | ≤ 150 psi |
| 5. | High Steam Flow in 2/3 Steam Lines*** | a. Safety Injection* b. Steam Line Isolation | $\leq 40\%$ (at zero load) of full steam flow $\leq 40\%$ (at 20% load) of full steam flow $\leq 110\%$ (at full load) of full steam flow |
| | Coincident with Low T_{avg} or Low Steam Line Pressure | | $\geq 541^{\circ}\text{F } T_{avg}$ **** ≥ 600 psig Steam line pressure **** |
| 6. | Loss of Power | | |
| | a. 480V Emerg. Bus Undervoltage (Loss of Voltage) Time Delay | Trip Normal Supply Breaker | 328 Volts ± 1 Volt .75 \pm .25 sec. |

TABLE 3.5-1 (Continued)

ENGINEERED SAFETY FEATURE SYSTEM INITIATION INSTRUMENT SETTING LIMITS

| <u>NO.</u> | <u>FUNCTIONAL UNIT</u> | <u>CHANNEL ACTION</u> | <u>SETTING LIMIT</u> |
|----------------|--|----------------------------|---|
| 6. (Cont'd) | b. 480V Emerg. Bus Undervoltage (Degraded Voltage) Time Delay | Trip Normal Supply Breaker | 412 Volts \pm 1 Volt 10.0 Second Delay \pm 0.5 sec. |
| 7. | Containment Radioactivity High | Ventilation Isolation | \leq 2 X Reading at the Time the Alarm is Set with Known Plant Conditions |

* Initiates also containment isolation (Phase A), feedwater line isolation and starting of all containment fans..

** Initiates also containment isolation (Phase B).

*** Derived from equivalent ΔP measurements.

**** These setting limits shall be greater than or equal to 524°F and 450 PSIG when operating under reduced temperature conditions described in the November 11, 1981 license submittal.

TABLE 3.5-3 (Continued)

INSTRUMENTATION OPERATING CONDITIONS FOR ENGINEERED SAFETY FEATURES

| <u>NO.</u> | <u>FUNCTIONAL UNIT</u> | <u>1 MINIMUM CHANNELS OPERABLE</u> | <u>2 MINIMUM DEGREE OF REDUNDANCY</u> | <u>3 OPERATOR ACTION IF CONDITIONS OF COLUMN 1 OR 2 CANNOT BE MET</u> |
|------------|--|--|---|---|
| 2. | CONTAINMENT SPRAY | | | |
| a. | Manual* | 2 | 0** | Cold Shutdown |
| b. | High Containment Pressure* (Hi-Hi Level) | 2/set | 1/set | Cold Shutdown |
| 3. | LOSS OF POWER | | | |
| a. | 480V Emerg. Bus Undervoltage (Loss of Voltage) | 2/bus (a) | 1/bus(b) | Maintain Hot Shutdown |
| b. | 480V Emerg. Bus Undervoltage (Degraded Voltage) | 2/bus | 1/bus | Maintain Hot Shutdown ^(c) |

* Also initiates a Phase B containment isolation.

** Must actuate two switches simultaneously.

*** When primary pressure is less than 2000 psig, channels may be blocked.

**** When primary temperature is less than 547°F, channels may be blocked.(d)

***** In this case the 2/3 high steam flow is already in the trip mode.

(a) During testing and maintenance of one channel, may be reduced to 1/bus.

(b) During testing and maintenance of one channel, may be reduced to 0/bus.

(c) The reactor may remain critical below the power operating conditions with this feature inhibited for the purpose of starting reactor coolant pumps.

(d) When operating under the reduced temperature conditions described in the November 11, 1981 license submittal the channels may be blocked when primary temperature is less than 530°F,