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 R. L. Tedesco, L:CS  
 ACRS (16)  
 RO (3)  
 OGC  
 M. S. Dunenfeld

JAN 09 1973

Docket No. 50-261

Carolina Power & Light Company  
 ATTN: Mr. N. B. Bessac, Manager  
 Nuclear Generation  
 336 Fayetteville Street  
 Raleigh, North Carolina 27602

Change No. 11  
 License No. DPR-23

Gentlemen:

Your letter dated December 15, 1972, submitted Proposed Change No. 11 to the Technical Specifications of Operating License No. DPR-23 for the H. B. Robinson Unit No. 2. The proposed change would reduce the values of the limits on quadrant tilt.

We have reviewed the proposed change and have concluded that implementation of the change will not present significant hazards considerations not described or implicit in the Safety Analysis Report and that there is reasonable assurance that the health and safety of the public will not be endangered.

Accordingly, pursuant to Section 50.59 of 10 CFR Part 50, the Technical Specifications of Operating License No. DPR-23 are hereby changed as indicated in Attachment A.

Sincerely,

Donald J. Skovholt  
 Assistant Director for  
 Operating Reactors  
 Directorate of Licensing

Enclosure:  
 Attachment A

cc w/enclosure:  
 George F. Trowbridge, Esquire  
 Shaw, Pittman, Potts, Trowbridge & Madden  
 910 - 17th Street, N. W.  
 Washington, D. C. 20006

R. J. Schemel, L:OR-1  
 T. J. Carter, L:OR  
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 N. Dube, L:OPS  
 M. Jinks, DRA (4)  
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 M. S. Dunenfeld

*aw*

OFFICE ▶	L:OR-1	L:OR-1	L:OR-1	L:OR		
SURNAME ▶	VLRooney:dc	SATeets	RJSchemel	DJSkovholt		
DATE ▶	1/5/73	1/5/73	1/9/73	1/9/73		

ATTACHMENT A

CHANGE NO. 11 TO THE TECHNICAL SPECIFICATIONS

OPERATING LICENSE NO. DPR-23

CAROLINA POWER & LIGHT COMPANY

DOCKET NO. 50-261

1. Delete paragraphs 3.10.2.1, 3.10.2.2, and 3.10.2.3. Replace these paragraphs with:

3.10.2.1 Power distribution limits are expressed as hot channel factors. Limiting values at rated power are:

$$F_{\Delta H}^N = 1.75$$

$$F_q^N = 2.75$$

If measured peaking factors exceed these values with due allowance for measurement error, the maximum allowable reactor power level and the nuclear overpower trip set point shall be reduced by one percent for each percent which  $F_{\Delta H}^N$  or  $F_q^N$  exceed the limiting values, whichever is more restrictive. If the hot channel factors cannot be reduced below the limiting values within twenty-four hours, the overpower  $\Delta T$  and overtemperature  $\Delta T$  trip set points shall be similarly reduced.

3.10.2.2 Except for physics tests, if the quadrant to average power tilt ratio exceeds 1.05 but is less than 1.12 or if a part-length or full-length control rod is more than 15 inches out of alignment with its bank, then within two hours:

- a. Correct the situation, or
- b. Determine by measurement the hot channel factors and apply Specification 3.10.2.1, or
- c. Limit power to 75% of rated power for 3-loop operation or 45% of rated power for 2-loop operation.

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3.10.2.3 If the quadrant to average power tilt ratio exceeds 1.05 but is less than 1.12 for a sustained period of more than twenty-four hours without known cause, or if such a tilt recurs intermittently without known cause, the reactor power level shall be restricted so as not to exceed 50% of rated power. If the cause of the tilt is determined, continued operation at a power level determined by 3.10.2.1 above shall be permitted.

3.10.2.4 Except for physics tests, if the quadrant to average power tilt ratio is 1.12 or greater, the reactor shall be put in the hot shutdown condition utilizing normal operating procedures. Subsequent operation for the purpose of measuring and correcting the tilt is permitted provided the power level does not exceed 50% of rated power and the nuclear overpower trip set point is reduced by 50%.

2. Delete the sentences in the basis dealing with quadrant tilt and rod out of alignment with its bank beginning on page 3.10-5 with the sentence that reads, "Eight hours is acceptable since complete rod misalignment (part-length or full-length control rod 12 feet out of alignment with its bank) does not result in exceeding core limits in steady state operation at rated power.", and ending with the sentence which reads, "A tilt ratio of 1.25 or more is indicative of a serious performance anomaly and a plant shutdown is prudent." Replace these sentences with:

"The <sup>two</sup> ~~four~~ hours in 3.10.2.2 are acceptable because complete rod misalignment (part-length or full-length control rod 12 feet out of alignment with its bank) does not result in exceeding core safety limits in steady state operation at rated power and is short with respect to probability of an independent accident. If the condition cannot be readily corrected, the specified reduction in power to 75% will ensure that design margins to core limits will be maintained under both steady state and anticipated transient conditions.

"The quadrant power tilt of 1.05 at which remedial action is required has been set so as to provide DNB and linear heat generation rate (kilowatts/foot) protection in radial power tilts. Analyses have shown that the ratio of increase in  $F\Delta H$  to increase in quadrant power tilt is less than or equal to 2 to 1. In addition, comprehensive dropped and static ejected rod testing performed during the initial startup program demonstrated that this ratio was less than 1.5 to 1. For conservatism, the 2 to 1 ratio is used.

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"The uncertainty factor included during the initial core nuclear design is 1.10 for both  $F_{\Delta N}^N$  and  $F_{\Delta N}^H$ . Therefore, the limiting tilt has been set as 1.05. To avoid unnecessary power changes, the operator is allowed two hours in which to verify the tilt reading and/or to determine and correct the cause of the tilt. Should this action verify a tilt in excess of 1.05 which remains uncorrected, the margin for uncertainty in  $F_{\Delta N}^N$  and  $F_{\Delta N}^H$  is reinstated by reducing the power by 2% for each percent of tilt above 1.0 in accordance with the 2 to 1 ratio above, or as required by the restriction on peaking factors.

"If instead of determining the hot channel factors the operator decides to reduce power, the specified 75% power maintains the design margin to core safety limits for up to 1.12 power tilt using the 2 to 1 ratio. Reducing the overpower trip set point ensures that the protection system basis is maintained for sustained plant operation. A tilt ratio of 1.12 or more is indicative of a serious performance anomaly and a plant shutdown is prudent."

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