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FROM: Carolina Power & Light Co/ Raleigh, N. C. E.E. Utley	DATE OF DOC 1-14-76	DATE REC'D 1-19-76	LTR XXX	TWX	RPT	OTHER
TO: Robert W. Reid	ORIG Signed	CC	OTHER	SENT NRC PDR XXX SENT LOCAL PDR XXX		
CLASS	UNCLASS XXX	PROP INFO	INPUT	NO CYS REC'D 3	DOCKET NO: 50-261	

DESCRIPTION:
Ntrz'd ltr. 1-14-76...Ltr. re their ltr. 12-18-75....

ENCLOSURES:
Requesting change to Tech Spec. regarding incorporating the operation fo the Axial Power Distribution Monitoring System (APDMS) .....

ACKNOWLEDGED
DO NOT REMOVE

PLANT NAME: H.B. Robinson

SAFETY — FOR ACTION/INFORMATION — ENVIRO — VCR 1-26-76

ASSIGNED AD _____

BRANCH CHIEF Reid (6)

PROJECT MANAGER Bridges

LIC. ASST. Ingram W/ No CYS ACRS

ASSIGNED BRANCH CHIEF _____

PROJECT MANAGER _____

LIC ASST. _____ W/ ACRS

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Carolina Power & Light Company

January 14, 1976

FILE: NG-3514(R) SERIAL: NG-76-063

Director of Nuclear Reactor Regulation
ATTN: Robert W. Reid, Chief
Branch No. 4
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

RE: H. B. ROBINSON UNIT NO. 2
DOCKET NO. 50-~~261~~ 261

Dear Sir:

Carolina Power & Light Company requests a change to the H. B. Robinson Unit No. 2 Technical Specifications to incorporate the operation of the Axial Power Distribution Monitoring System (APDMS). The APDMS will be used when Fxy exceeds 1.435 to assure that the total peaking factor F_q^T will be maintained less than a value of 2.30.

Our letter of December 18, 1975, described the circumstances which resulted in the need to use APDMS. The Technical Specification change request is submitted in response to our commitment in our December 18, 1975 letter to provide appropriate changes to the specifications.

Yours very truly,

E. E. Utley
Vice President
Bulk Power Supply

RLMjr/nja

Enclosure

cc: Mr. N. C. Moseley

481

Sworn to and subscribed before me this 14th day of January, 1976.

Marilyn Y. Pease
Notary Public

My Commission Expires: October 19, 1980

336 Fayetteville Street • P. O. Box 1551 • Raleigh, N. C. 27602

H. B. ROBINSON UNIT NO. 2
TECHNICAL SPECIFICATION CHANGES

Instruction Sheet

Pages To Be Removed	Pages To Be Inserted
3.10-2	3.10-2
-	3.10-2a
-	4.11-1
-	4.11-2

3.10.2 Power Distribution Limits

3.10.2.1 At all times except during low power physics tests, the hot channel factors defined in the basis must meet the following limits:

$F_Q(Z) \leq (2.30/P) \times K(Z)$ for $P > .5$

$F_Q(Z) < (4.60) \times K(Z)$ for $P \leq .5$

$F^N_{\Delta H} < 1.55\ (1 + 0.2(1-P))$

where P is the fraction of rated power at which the core is operating, K(Z) is the function given in Figure 3.10-3, and Z is the core height location of F_Q.

3.10.2.1.1 If the value of Fxy for the unrodded plane of the core exceeds 1.435 as determined from power distribution maps using the movable detector system, the Axial Power Distribution Monitoring System (APDMS) will be employed to monitor $F_Q(Z)$ above a predetermined power level, P_{APDMS}. The limiting value is expressed as:

$$[F_j(Z)S(Z)]_{max} \leq \frac{2.085/P}{\bar{R}_j(1+\sigma_j)}$$

where:

a. P is the fraction of rated power at which the core is operating ($P \leq 1.0$)

b. $\bar{R}_j$, for thimble j, is determined from core power maps i and is by definition:

$$\bar{R}_j = 1/6 \sum_{i=1}^{6} \frac{F^N_{qi}}{[F(Z)_{ij}S(Z)]_{max}}$$

F^N_{qi} is the value obtained from a full core map without the measurement uncertainty factor F^N_u. The quantity $F(Z)_{ij}S(Z)$ is the measured value without inclusion of the instrument uncertainty factor F^a_q. Those uncertainty factors, $F^N_u = 1.05$ and $F^a_q = 1.02$, have been included in the limiting value of 2.085/P.

c. σ_j is the standard deviation associated with the determination of $\bar{R}_j$.

d. S(Z) is the inverse of the K(Z) function given in Figure 3.10-3.

3.10.2.1.2 The predetermined power level at which APDMS initiation is required is given by the relation

$$P_{APDMS} \leq \frac{1.435}{Fxy}$$

3.10.2.1.3 Fxy shall be determined for the unrodded core plane regions away from fuel support grids, located between a core plane elevation 3.0 feet from the top of the core and a core plane elevation 3.0 feet from the bottom of the core, with no full or part length control rod inserted more than 3.0 feet into the core. This determination shall be made from the movable incore detector maps specified in 3.10.2.3.

3.10.2.2 If either measured hot channel factor exceeds these values the reactor power shall be reduced so as not to exceed a fraction of the design value equal to the ratio of the F_Q^N or $F_{\Delta H}^N$ limit to measured value, whichever is less, and the high neutron flux trip setpoint shall be reduced by the same ratio. If subsequent incore mapping cannot, within a 24-hour period, demonstrate that the hot channel factors are met, the overpower ΔT and overtemperature ΔT trip setpoints shall be similarly reduced.

3.10.2.3 Following initial loading and at regular monthly intervals thereafter, power distribution maps using the movable detector system, shall be made to confirm that the hot channel factor limits of specification 3.10.2.1 are satisfied. For the purpose of this confirmation:

4.11 REACTOR CORE

Applicability:

Applies to surveillance of the reactor core.

Objective:

To ensure the integrity of the fuel cladding.

Specifications:

4.11.1 APDMS Operation

4.11.1.1 Prior to establishing normal operation with APDMS, at least six maps will be taken to determine applicable values of $\bar{R}$ and σ for surveillance thimbles.

4.11.1.2 Plant operation up to full rated power shall be permitted for the purposes of obtaining the initial maps of Specification 4.11.1.1, provided the APDMS is operational and hot channel factors are shown to be below the limiting values set forth in Specification 3.10.2. Suitably conservative values of $\bar{R}$ and σ shall be derived from maps previously run during the current fuel cycle for use in the APDMS system during this initial period.

4.11.1.3 Subsequent update of $\bar{R}$ and σ shall employ the last six maps run in accordance with Specification 4.11.1.1.

4.11.1.4 Each power distribution map will be based on flux traverses obtained from 36 or more of the 46 monitoring channels.

4.11.2 Axial surveillance of F(Z)S(Z) shall consist of traverses with the movable incore detectors in appropriate pairs of detector paths, taken every eight hours, or a frequency of approximately 0, 10, 30, 60, 120, 180, 240, 360, and 480 minutes following accumulated control rod motion in any one direction of five steps or more, exclusive of control rod movement within 15 steps from the top of the core. From the traverses, determination of F(Z)S(Z) shall be made and shown to result in a value less than the limiting value specified in 3.10.2. If the APDMS is out of service, reactor operation above P_{APDMS} can be continued for fourteen equivalent full power days provided that traverses are taken manually at equivalent frequencies, and a log of accumulated rod motion and time of manual traverses is kept.

4.11.3 The following criteria will be used for selecting the channels for measuring F(Z)S(Z):

a. The channel is not acceptable if it contains a control rod allowed by the insertion limits at power levels requiring APDMS.

b. For the latest full core power map, i, channels, j, are acceptable if:

$$\left| \frac{R_{ij} - \bar{R}_j}{\bar{R}_j} \right| \leq 2\sigma_j$$

Basis

The $\bar{R}$ technique provides a means for using many of the monitoring thimbles to determine $F_Q(Z)$ without fully mapping the core. Frequent core maps assure that appropriate values of $\bar{R}$ are being used for each thimble.

Upon return to power following a refueling outage or other situation where establishment of normal APDMS operation is required, power operation above P_{APDMS} is desirable to establish hot channel factors at full power. By using maps that have been previously obtained during the power ascension and deriving conservative values of $\bar{R}$ and σ from these maps for use in the APDMS, operation of the plant within the peaking factor limitations can be ensured.

If the APDMS is out of service, adequate monitoring of the core power distribution can be maintained for a limited period of time by manual actuation of the flux mapping system and calculation of the values of F(Z)S(Z).