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FACIL:50-335 St. Lucie Plant, Unit 1, Florida Power & Light Co. 05000335
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CLARK,R.A. Operating Reactors Branch 3

SUBJECT: Forwards responses to NRC 810828 telcon request for addl info re main stream line break reanalysis.

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FLORIDA POWER & LIGHT COMPANY

September 11, 1981
L-81-397

Office of Nuclear Reactor Regulation
Attention: Mr. Robert A. Clark, Chief
Operating Reactors Branch #3
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Clark:

Re: St. Lucie Unit 1
Docket No. 50-335
Proposed Amendment: Shutdown Margin Changes
Due To Main Steam Line Break Reanalysis

Enclosed are responses to the two (2) areas of concern that we were requested to submit information on during a conference call with members of your staff on August 28, 1981 to discuss the Main Steam Line Break Reanalysis (performed as a result of TMI required modifications) L-81-306, Proposed Amendment - July 23, 1981, and its relationship to our Stretch Power Application L-80-381, Proposed Amendment - November 14, 1980.

Very truly yours,

Robert E. Uhrig
Vice President
Advanced Systems & Technology

REU/DME/ah

Enclosures

cc: J. P. O'Reilly, Director, Region II
Harold F. Reis, Esquire (w/o enclosures)

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NRC Question

In view of the changes in MTC and the required shutdown margin, provide a new table of CEA reactivity worths and allowances including uncertainties to verify that sufficient CEA worth is available.

Proposed Response

Table 1 presents a summary of CEA shutdown worths and reactivity allowances for the end of Cycle 5 zero power steam line break accident. The EOC zero power steam line break was selected since it is the most limiting zero power steam line break accident, and thus provides the basis for establishing the Technical Specification required shutdown margin. This table includes the proposed Technical Specification shutdown margin of 5.0% $\Delta\rho$, an explicit allowance for the uncertainty in the calculated scram worth, and a CEA worth allowance to account for the CEA insertion allowed by the insertion limit at zero power. As item 9 of Table 1 illustrates, there is sufficient CEA worth available at the end of cycle to meet or exceed the proposed Technical Specification shutdown margin.

Table 1

St. Lucie Unit 1 Cycle 5 Limiting Values of Reactivity Worths and Allowances for Hot Zero Power Steam Line Break, %Δρ End-of-Cycle (EOC)

	Cycle 5
1. Worth of all CEA's inserted	10.3
2. Stuck CEA allowance	3.0
3. Worth of All CEA's Less Highest Worth CEA Stuck Out	7.3
4. Inserted CEA Worth at Zero Power Insertion Limit	1.5
5. Calculated Scram Worth	5.8
6. Physics Uncertainty (10% of Item 5)	.6
7. Net Available Scram Worth (Item 5 minus Item 6)	5.2
8. Proposed Technical Specification Shutdown Margin	5.0
9. Margin in Excess of Technical Specification Shutdown Margin	+0.2

Question

Explain in more detail the reason for and the justification of the proposed Technical Specification change on page 3/4 1-2 relating to not requiring the assumption of a stuck rod for the calculation of shutdown margin for modes 3 and 4. Can a CEA be withdrawn, either intentionally or inadvertently from these modes?

Response

This change will allow the appropriate shutdown margin requirement to be met with a lower RCS boron concentration with all rods in (ARI) in modes 3 and 4. The lower RCS boron concentration is made possible by including the worth of the highest worth rod (CEA) in the calculation of shutdown margin in modes 3 and 4. This exemption of the stuck rod penalty is only credited when ARI is verified in modes 3 and 4.

The hypothetical stuck rod penalty ensures that adequate shutdown margin is present in the event that the highest worth rod remains fully withdrawn upon a trip. This change will only exempt the stuck rod penalty while complying with the requirements of paragraph e of Technical Specification 3.1.1.1 (for modes 3 and 4) upon verification of ARI. This verification of ARI ensures that a stuck rod configuration does not exist. Once rod withdrawal has commenced during reactor startup, the stuck rod penalty will be included in the calculation of shutdown margin and will be the basis for the RCS boron concentration.

Upon a reactor or turbine trip the operator will ensure that all CEA's are fully inserted and reactor trip breakers are open. The reactor trip breakers are not closed again until reactor startup has commenced. The CEA's are de-energized preventing CEA withdrawal while the trip breakers are open. With the trip breakers closed, the CEA block circuit will block withdrawal of a single CEA.