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DEFINITIONS

REACTOR TRIP SYSTEM RESPONSE TIME

1.26 The REACTOR TRIP SYSTEM RESPONSE TIME shall be the time interval from when the monitored parameter exceeds its trip setpoint at the channel sensor until electrical power is interrupted to the CEA drive mechanism.

ENGINEERED SAFETY FEATURE RESPONSE TIME

1.27 The ENGINEERED SAFETY FEATURE RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays where applicable.

PHYSICS TESTS

1.28 PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation and 1) described in Chapter 14.0 of the FSAR, 2) authorized under the provisions of 10 CFR 50.59, or 3) otherwise approved by the Commission.

UNRODDED INTEGRATED RADIAL PEAKING FACTOR - F_r

1.29 The UNRODDED INTEGRATED RADIAL PEAKING FACTOR is the ratio of the peak pin power to the average pin power in an unrodded core, excluding tilt.

SURVEILLANCE REQUIREMENTS (Continued)

c. Verifying that the AXIAL SHAPE INDEX is maintained within the allowable limits of Figure 3.2-2, where 100 percent of maximum allowable power represents the maximum THERMAL POWER allowed by the following expression:

$M \times N$

where:

1. M is the maximum allowable THERMAL POWER level for the existing Reactor Coolant Pump combination.

2. N is the maximum allowable fraction of RATED THERMAL POWER as determined by the F_{xy}^{I} curve of Figure 3.2-3.

4.2.1.4 Incore Detector Monitoring System# - The incore detector monitoring system may be used for monitoring the core power distribution by verifying that the incore detector Local Power Density alarms:

a. Are adjusted to satisfy the requirements of the core power distribution map which shall be updated at least once per 31 days of accumulated operation in MODE 1.

b. Have their alarm setpoint adjusted to less than or equal to the limits shown on Figure 3.2-1 when the following factors are appropriately included in the setting of these alarms:

1. A measurement-calculational uncertainty factor of 1.07,

2. An engineering uncertainty factor of 1.03,

3. A linear heat rate uncertainty factor of 1.01 due to axial fuel densification and thermal expansion, and

4. A THERMAL POWER measurement uncertainty factor of 1.02.

If the incore system becomes inoperable, reduce power to M x N within 4 hours and monitor linear heat rate in accordance with Specification 4.2.1.

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POWER DISTRIBUTION LIMITS

3/4.2.2 TOTAL PLANAR RADIAL PEAKING FACTORS - F_{xy}^T

LIMITING CONDITION FOR OPERATION

3.2.2 The calculated value of F_{xy}^T shall be limited to $\leq$ 1.70

APPLICABILITY: MODE 1*.

ACTION:

With $F_{xy}^T >$ 1.70 within 6 hours either:

a. Reduce THERMAL POWER to bring the combination of THERMAL POWER and F_{xy}^T to within the limits of Figure 3.2-3 and withdraw the full length CEAs to or beyond the Long Term Steady State Insertion Limits of Specification 3.1.3.6; or

b. Be in HOT STANDBY.

SURVEILLANCE REQUIREMENTS

4.2.2.1 The provisions of Specification 4.0.4 are not applicable.

4.2.2.2 F_{xy}^T shall be calculated by the expression $F_{xy}^T = F_{xy}(1+T_q)$ when F_{xy} is calculated with a non-full core power distribution analysis code and shall be calculated as $F_{xy}^T = F_{xy}$ when calculations are performed with a full core power distribution analysis code. F_{xy}^T shall be determined to be within its limit at the following intervals:

a. Prior to operation above 70% of RATED THERMAL POWER after each fuel loading,

b. At least once per 31 days of accumulated operation in MODE 1, and

c. Within 4 hours if the AZIMUTHAL POWER TILT (T_q) is > 0.03.

* See Special Test Exception 3.10.2.

SURVEILLANCE REQUIREMENTS (Continued)

4.2.2.3 F_{xy} shall be determined each time a calculation of F_{xy}^T is required by using the incore detectors to obtain a power distribution map with all full length CEAs at or above the Long Term Steady State Insertion Limit for the existing reactor coolant pump combination. This determination shall be limited to core planes between 15% and 85% of full core height and shall exclude regions influenced by grid effects.

4.2.2.4 T_q shall be determined each time a calculation of F_{xy}^T is made using a non full core power distribution analysis code. The value of T_q used in this case to determine F_{xy}^T shall be the measured value of T_q.

POWER DISTRIBUTION LIMITS

TOTAL INTEGRATED RADIAL PEAKING FACTOR - F_r^T

LIMITING CONDITION FOR OPERATION

3.2.3 The calculated value of F_r^T, shall be limited to $\leq$ 1.70.

APPLICABILITY: MODE 1*.

ACTION:

With F_r^T > 1.70, within 6 hours either:

a. Be in at least HOT STANDBY, or

b. Reduce THERMAL POWER to bring the combination of THERMAL POWER and F_r^T to within the limits of Figure 3.2-3 and withdraw the full-length CEAs to or beyond the Long Term Steady State Insertion Limits of Specification 3.1.3.6. The THERMAL POWER limit determined from Figure 3.2-3 shall then be used to establish a revised upper THERMAL POWER level limit on Figure 3.2-4 (truncate Figure 3.2-4 at the allowable fraction of RATED THERMAL POWER determined by Figure 3.2-3) and subsequent operation shall be maintained within the reduced acceptable operation region of Figure 3.2-4.

SURVEILLANCE REQUIREMENTS

4.2.3.1 The provisions of Specification 4.0.4 are not applicable.

4.2.3.2 F_r^T shall be calculated by the expression $F_r^T = F_r(1+T_q)$ when F_r is calculated with a non-full core power distribution analysis code and shall be calculated as $F_r^T = F_r$ when calculations are performed with a full core power distribution analysis code. F_r^T shall be determined to be within its limit at the following intervals.

a. Prior to operation above 70% of RATED THERMAL POWER after each fuel loading.

b. At least once per 31 days of accumulated operation in MODE 1, and

c. Within 4 hours if the AZIMUTHAL POWER TILT (T_q) is > 0.03.

*See Special Test Exception 3.10.2.

SURVEILLANCE REQUIREMENTS (Continued)

4.2.3.3 F_r shall be determined each time a calculation of F_r^T is required by using the incore detectors to obtain a power distribution map with all full length CEAs at or above the Long Term Steady State Insertion Limit for the existing reactor coolant pump combination.

4.2.3.4 T_q shall be determined each time a calculation of F_r^T is made using a non-full core power distribution analysis code. The value of T_q used to determine F_r^T in this case shall be the measured value of T_q.

3/4.2 POWER DISTRIBUTION LIMITS

BASES

3/4.2.1 LINEAR HEAT RATE

The limitation on linear heat rate ensures that in the event of a LOCA, the peak temperature of the fuel cladding will not exceed 2200°F.

Either of the two core power distribution monitoring systems, the Excore Detector Monitoring System and the Incore Detector Monitoring System, provide adequate monitoring of the core power distribution and are capable of verifying that the linear heat rate does not exceed its limits. The Excore Detector Monitoring System performs this function by continuously monitoring the AXIAL SHAPE INDEX with the OPERABLE quadrant symmetric excore neutron flux detectors and verifying that the AXIAL SHAPE INDEX is maintained within the allowable limits of Figure 3.2-2. In conjunction with the use of the excore monitoring system and in establishing the AXIAL SHAPE INDEX limits, the following assumptions are made: 1) the CEA insertion limits of Specifications 3.1.3.5 and 3.1.3.6 are satisfied, 2) the AZIMUTHAL POWER TILT restrictions of Specification 3.2.4 are satisfied, and 3) the TOTAL PLANAR RADIAL PEAKING FACTOR does not exceed the limits of Specification 3.2.2.

The Incore Detector Monitoring System continuously provides a direct measure of the peaking factors and the alarms which have been established for the individual incore detector segments ensure that the peak linear heat rates will be maintained within the allowable limits of Figure 3.2-1. The setpoints for these alarms include allowances, set in the conservative directions, for: 1) a measurement-calculational uncertainty factor of 1.07, 2) an engineering uncertainty factor of 1.03, 3) an allowance of 1.01 for axial fuel densification and thermal expansion, and 4) a THERMAL POWER measurement uncertainty factor of 1.02.

3/4.2.2, 3/4.2.3 and 3/4.2.4 TOTAL PLANAR AND INTEGRATED RADIAL PEAKING FACTORS - F_{xy}^T AND F_r^T AND AZIMUTHAL POWER TILT - T_q

The limitations on F_{xy}^T and T_q are provided to ensure that the assumptions used in the analysis for establishing the Linear Heat Rate and Local Power Density - High LCOs and LSSS setpoints remain valid during operation at the various allowable CEA group insertion limits. The limitations on F_r^T and T_q are provided to ensure that the assumptions

used in the analysis of establishing the DNB Margin LCO, the Thermal Margin/Low Pressure LSSS setpoints remain valid during operation at the various allowable CEA group insertion limits.

If F_{xy}^T, F_r^T or T_q exceed their basic limitations, operation may continue under the additional restrictions imposed by the ACTION statements since these additional restrictions provide adequate provisions to assure that the assumptions used in establishing the Linear Heat Rate, Thermal Margin/Low Pressure and Local Power Density - High LCDs and LSSS setpoints remain valid.

An AZIMUTHAL POWER TILT > 0.10 is not expected and if it should occur, subsequent operation would be restricted to only those operations required to identify the cause of this unexpected tilt.

The requirement that the measured value of (1 + Tq) be multiplied by the calculated values of F_r and F_{xy} to determine F_{xy}^T is applicable only when F_r and F_{xy} are calculated with a non-full core power distribution analysis. With a full core power distribution analysis code the azimuthal tilt is explicitly accounted for as part of the radial power distribution used to calculate F_{xy} and F_r.

The Surveillance Requirements for verifying that F_{xy}^T, F_r^T and T_q are within their limits provide assurance that the actual values of F_{xy}, Fr and T_q does not exceed the assumed values. Verifying F_{xy} and F_r after each fuel loading prior to exceeding 75% of RATED THERMAL POWER provides additional assurance that the core was properly loaded.

3/4.2.5 DNB PARAMETERS

The limits on the DNB related parameters assure tht each of the parameters are maintained within the normal steady state envelope of operation asumed in the transient and accident analyses. The limits are consistent with the safety analyses assumptions and have been analytically demonstrated adequate to maintain a minimum DNBR of 1.23 throughout each analyzed transient.

The 12 hour periodic surveillance of these parameters through instrument readout is sufficient to ensure that the parameters are restored within their limits following load changes and other expected transient operation. The 18 month periodic measurement of the RCS total flow rate is adequate to detect flow degradation and ensure correlation of the flow indication channels with measured flow such that the indicated percent flow will provide sufficient verification of flow rate on a 12 hour basis.

SAFETY EVALUATION

I. Removal of References to Load Follow Mode

Since commercial operation of St. Lucie Unit 1 in 1976, Florida Power & Light Co. has operated Unit 1 in a base loaded mode. Due to the significant economic advantages associated with maximizing Unit 1 electrical output, operation in the base loaded mode will continue for the foreseeable future. For this reason, references to load follow operation are not applicable to St. Lucie Unit 1 and should be deleted.

Additionally, the specific penalty factors to be applied to calculated nuclear peaking factors (Technical Specifications 3.2-1, 3.2-2, 3.2-3) in the load follow mode were intended to be interim values until NRC approval of the CECOR power distribution analysis topical report CENPD-153. CECOR will be available for plant use during cycle 6. Discussions with Combustion Engineering indicate that following the approval of CENPD-153 these penalty factors are covered by the results of the topical report and therefore are not required.

II. Removal of the Azimuthal Tilt (T_q) Penalty Factor

It is customary to perform all nuclear peaking factor calculations for St. Lucie Units 1 and 2 with a full core power distribution analysis code. As such, any tilt component in the radial power distribution is explicitly factored into the calculated peaking factors. It is therefore unnecessary to multiply the values derived from a full core power distribution analysis by the tilt factor. The tilt penalty factor will continue to be included on radial peaking factor calculations performed with a non-full core power distribution analysis code.

The original basis for the inclusion of the tilt multiplier on radial peaking factor values goes back to cycle 1 at St. Lucie Unit 1 when the only power distribution analysis code available was INCA which made use of octant core symmetry. Because of the radial smoothing effect present when using folded geometry (INCA), it was necessary to include the tilt multiplier separately. During later cycles more advanced incore analysis codes have been developed which utilize full core geometry. Peaking factors and linear heat rates (Fq) for both St. Lucie units are calculated with full core codes. The continued applicability of the tilt multiplier to peaking factors calculations is needed ony for non-full core analysis code results.

DETERMINATION OF NO SIGNIFICANT HAZARD

The proposed amendment would change Technical Specifications 3.2.1, 3.2.2, and 3.2.3 to remove references to the load follow mode of operation and limit the applicability of the azimuthal tilt (Tq) multiplier to peaking factor calculations performed with non-full core power distribution analysis codes. The acceptability of these changes, in that they involve no significant hazard considerations as defined by 10 CFR 50.92(c) is discussed below:

1. 10 CFR 50.92(c)(i) The modifications proposed will not involve a significant increase in the probability or consequences of an accident previously evaluated because neither of the changes proposed require a change in analysis input or assumptions for any St. Lucie Unit 1 transient. Therefore, acceptable results will continue to be shown for all previously analyzed transients.

2. 10 CFR 50.92(c)(2): The proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated because they do not modify the configuration of the plant or the manner in which it is operated. Since no changes to the plant or its operation are made to the proposed change, there is no increase in the possibility of creating an accident of a new or different type over what currently exists without the proposed change.

3. 10 CFR 50.92(c)(3): The proposed changes do not involve any reduction in the margin of safety because neither of these changes involve any changes in allowable modes of plant operation or allowable envelopes for plant operational parameters. Additionally, none of the changes proposed either represents or requires change in input to plant safety analysis.

   Based on the discussion presented above and the enclosed safety evaluation, Florida Power & Light Company has concluded that none of the proposed changes to St. Lucie 1 Technical Specifications would represent a significant hazard as discussed in 10 CFR 50. 92(c).

STATE OF FLORIDA)
) ss.
COUNTY OF PALM BEACH)

Robert E. Uhrig, being first duly sworn, deposes and says:

That he is Vice President of Florida Power & Light Company, the Licensee herein;

That he has executed the foregoing document; that the statements made in this document are true and correct to the best of his knowledge, information, and belief, and that he is authorized to execute the document on behalf of said Licensee.

Robert E. Uhrig

Robert E. Uhrig

Subscribed and sworn to before me this
25 day of August, 1983.

Cheryl L. Fredrick

NOTARY PUBLIC, in and for the County of Palm Beach, State of Florida.

My commission expires: Notary Public, State of Florida at Large
My Commission Expires October 30, 1983
Bonded thru Maynard Bonding Agency