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SUBJECT: Submits Rev 1 to 911029 temporary waiver of compliance from TS 3.2.1.b, "Axial Flux Difference" to clarify that ex-core calibr cannot be performed at power level recommended in TS Table 4.3-1.

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L-91-303

OCT 30 1991

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Gentlemen:

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Power Range Neutron Flux Channel Surveillance Testing With Axial Flux Difference Outside of Target Band
Temporary Waiver of Compliance Revision 1

By letter L-91-294, dated October 29, 1991, Florida Power & Light (FPL) requested the Nuclear Regulatory Commission's approval of a temporary waiver of compliance of Technical Specification 3.2.1.b, "Axial Flux Difference." This letter is a clarification of letter L-91-294. The waiver would allow operation with the Axial Flux Difference (AFD) outside the ± 5% target band without accruing penalty deviation time, solely for the calibration of excore detectors, provided the AFD is within the Acceptable Operation Limits of Technical Specification (TS) Figure 3.2-1. The waiver accomplishes this by referencing footnote "**" of TS 3.2.1 in the APPLICABILITY statement of the specification rather then in the ACTION statement of TS 3.2.1. b(2).

TS 3.2.1 contains a footnote which allows 16 hours of operation outside the referenced AFD target band, but within the Acceptable Operation Limits of Figure 3.2-1, for the purpose of performing an incore/excore calibration of the Nuclear Instrumentation System detectors. The footnote now applies to ACTION Statement b(2) of TS 3.2.1.

Table 4.3-1, "Reactor Trip System Instrumentation Surveillance Requirements," Item 2.a "Power Range, Neutron Flux - High Setpoint Channel Calibration," references footnote (6) which recommends that the incore-excore calibration be performed above 75% of rated thermal power.

The "**" footnote reads as follows:

> "** Surveillance testing of the Power Range Neutron Flux Channels may be performed pursuant to Specification 4.3.1.1 provided the indicated AFD is maintained within the Acceptable Operation Limits of Figure 3.2-1. A total of 16 hours operation may be accumulated with the AFD outside of the above required target band during testing without penalty deviation."

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In the Turkey Point Technical Specifications, this footnote applies to ACTION statement (b) of TS 3.2.1, which pertains solely to reducing the power range neutron flux - high trip setpoint at a power level of less than 50% of Rated Thermal Power (RTP).

Because of the location of the footnote, the excore calibration can not be performed at the power level recommended in Technical Specification Table 4.3-1. The accuracy of the calibration is dependent on the power level at which the test is performed, therefore, it is important to perform the incore/excore calibration test above 75% of RTP. Calibration at less than 50% power or with a limited axial flux difference reduces the accuracy of the setpoints at 100% power.

A description of the written request for the temporary waiver of compliance is provided in Attachment 1. The basis for FPL's conclusion that the request does not involve a significant hazards consideration is provided in Attachment 2.

Issuance of this waiver does not compromise either the health and safety of plant personnel or the general public or involve irreversible environmental consequences.

This document was reviewed by the Plant Nuclear Safety Committee, and approved by the Plant Manager.

Should there be any questions, please contact us.

Very truly yours,

T. F. Plunkett
Vice President
Turkey Point Nuclear

TFP/rjt/rt

cc: Assistant Director of Projects, NRR, USNRC
Mr. Rajender Auluck, Project Manager, NRR, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

ATTACHMENT 1

REQUEST FOR TEMPORARY WAIVER OF COMPLIANCE

REQUEST FOR TEMPORARY WAIVER OF COMPLIANCE

Dr. Thomas E. Murley, Director of NRC Office of Nuclear Regulation, prepared a staff position paper dated February 22, 1990, documenting details to be included in a submittal for a temporary waiver of compliance. In accordance with this staff position paper, Florida Power and Light Company (FPL) submits the enclosed written request.

(1) **A discussion of the requirements for which a waiver is requested.**

FPL requests a temporary waiver of compliance of Technical Specification 3.2.1, "Axial Flux Difference." The proposed waiver would allow operation with the Axial Flux Difference (AFD) outside the required target band of ± 5% without accruing penalty deviation time, but within the Acceptable Operation Limits of Figure 3.2-1, at power levels between 50% and 90% of Rated Thermal Power (RTP), for a time interval not to exceed 16 hours, for the sole purpose of performing an incore/excore calibration of the Nuclear Instrumentation System detectors.

TS 3.2.1 contains a footnote which allows 16 hours of operation outside the referenced AFD target band, but within the Acceptable Operation Limit, for the purpose of performing the incore/excore calibration.

In the Turkey Point Technical Specifications, this footnote applies only to ACTION statement (b)(2) of TS 3.2.1., which pertains solely to reducing the high trip setpoint for power range neutron flux. Because of the location of the footnote, the excore calibration can not be performed at the power level recommended in Table 4.3-1 of Turkey Point's Technical Specifications. The accuracy of the calibration is dependent on the power level at which the test is performed, therefore, it is important to perform the incore/excore calibration test above 75% of rated thermal power. Calibration at less than 50% power or with a limited axial flux difference reduces the accuracy of the setpoints at 100% power.

(2) **A discussion of circumstances surrounding the situation including the need for prompt action, and a description of why the situation could not have been avoided.**

a) Background:

Following calibration of the excore detectors at 100% power of Turkey Point Unit 3, FPL discovered an inconsistency in the surveillance requirements between Turkey Point's new standard Technical Specifications and the latest version of

NUREG-0452, Rev. 5. FPL determined that Unit 3 was unable to concurrently satisfy the requirements of both TS 3.2.1 and 3/4.3.1. As a result, FPL is requesting approval of this waiver prior to proceeding to full power operation for Turkey Point Unit 4.

The proposed waiver requests operation with the Axial Flux Difference (AFD) outside the required target band of ± 5% without accruing penalty deviation time, but within the Acceptable Operation Limits of Figure 3.2-1. This would occur at power levels between 50% and 90% of Rated Thermal Power (RTP), for a time interval not to exceed 16 hours, for the sole purpose of performing an incore/excore calibration of the Nuclear Instrumentation System detectors.

TS 3.2.1 contains a footnote which allows 16 hours of operation outside the referenced AFD target band, but within the Acceptable Operation Limits of Figure 3.2-1, for the purpose of performing an incore/excore calibration of the Nuclear Instrumentation System detectors. In the Turkey Point Technical Specifications, this footnote applies to ACTION Statement (b)(2) of TS 3.2.1, which limits the power level for the incore/excore calibration to less than 50% RTP. This directly conflicts with TS Table 4.3-1, "Reactor Trip System Instrumentation Surveillance Requirements," Item 2.a "Power Range, Neutron Flux - High Setpoint Channel Calibration," which references footnote (6) and states that the incore/excore calibration must be performed above 75% of rated thermal power, unless sustained operation is below that power level.

In the case of performing this calibration at a power level of less than 50% RTP, the excore calibration is sensitive to core power level and as a result, calorimetric uncertainties below 50% RTP will reduce confidence in the incore/excore calibration. At low powers calorimetric calculations are less accurate. This was documented in WCAP-12201, "Basis for Westinghouse Setpoint Methodology for Protection Systems - Turkey Point Units 3 and 4," March 1990.

Turkey Point may perform this calibration above 75% power. In that case, the Technical Specifications require that the AFD be maintained within the ± 5% target band. However, Westinghouse has recommended in the NRC approved WCAP 8648-P-A, "Excore Detector Recalibration Using Quarter-Core Flux Maps" that the initial conditions for the incore/excore calibration procedure be established such that the AFD Technical Specification limits of Figure 3.2-1 (less about 1% margin on positive and negative limits) be available. The basis of this recommendation is that due to neutron diffusion, the AFD as seen by the excore detectors is significantly reduced from the AFD seen by the incore detectors. An adequate AFD must be induced in order to minimize excore detector uncertainties.

The calibration of excore detectors to incore axial shape is a linear relationship. Uncertainty in excore AFD is a function of the extrapolation uncertainties in the linear regression performed as part of the calibration process. Calibrations performed within a narrow AFD span will result in a higher uncertainty at AFD extremes than calibrations performed with a wider AFD swing. It is important that the calibration be performed with as wide a span as possible. This is necessary because the excore AFD uncertainty has a direct impact on the Overpower and Overtemperature delta-T penalty function.

b) Need for Prompt Action:

Because of the location of the footnote, the excore calibration should not be performed at the power level recommended in Technical Specification Table 4.3-1, outside the TS allowed target band. Following calibration of the excore detectors at 100% power of Turkey Point Unit 3, FPL recognized the inconsistency within the Technical Specifications. This inconsistency within the Technical Specifications serves as the basis for this request for a temporary waiver of compliance.

In the event this waiver is not approved by the NRC, in accordance with Turkey Point's Technical Specifications the only option available to FPL is to perform the incore/excore calibration at a power level greater than 75% RTP and within the AFD target band of ±5%. However, following management review of this issue, FPL concluded that the level of uncertainty associated with the setpoints obtained through performance of the surveillance within the ±5% AFD target band was not consistent with prudent plant operation or proper engineering judgement. Turkey Point Unit 4 is scheduled to begin power escalation above 50% on October 31,

1991. The fundamental reason for prompt action on this request is to assure that Turkey Point will be able to achieve full power operation.

c) Description as to why this situation could not be avoided

On Friday, October 18, 1991, during the calibration of the Power Range Neutron Flux Detectors, FPL determined that the calibration could not be performed with the necessary flux difference at power levels above 50%, while at the same time complying with Technical Specifications.

Between October 18 and October 23, FPL was evaluating various options. These included performance of the surveillance while maintaining the ±5% AFD target band, or performance of the surveillance with a more appropriate AFD, following NRR approval of a temporary waiver of compliance. By October 24, FPL concluded that the level of uncertainty associated with the setpoints obtained through performance of the surveillance within the ±5% AFD target band was not consistent with prudent plant operation or proper engineering judgement. FPL proceeded to immediately develop the request for a temporary waiver of compliance and a Proposed License Amendment to permanently correct the Technical Specifications. The initial request for the temporary waiver of compliance was issued by FPL on October 29, 1991.

(3) A discussion of compensatory actions (if any).

None.

(4) A preliminary evaluation of the safety significance and potential consequences of the proposed request.

The Axial Flux Difference (AFD) is a measure of axial power distribution as measured by the excore power range channels. AFD is sensitive to control bank position, core power level, and burnup. Calorimetric uncertainties below 50% RTP can reduce confidence in the incore/excore calibration. To minimize extrapolation errors it is recommended that the data acquired for AFD calibration purposes be taken at power levels equal to or greater than 75% RTP. Per WCAP-8648-P-A, "Excore Detector Recalibration Using Quarter-Core Flux Maps", rodded power distributions are used to assure that compensation of rodded affects on AFD will be made. Bank insertion and a controlled xenon oscillation are mechanisms used to produce the change in the axial power distribution. To compensate for the burnup dependency, an incore/excore calibration is performed: 1)

monthly, if a single point comparison of incore to excore shows that the absolute difference is greater than or equal to 3% AFD, or 2) at least once per quarter.

To perform a controlled xenon oscillation for incore/excore calibration, sufficient time must be available. As shown in WCAP-8648-P-A, eleven hours may be required to obtain an AFD configuration such that sufficient data is sampled. This WCAP also indicates that the initial conditions for the incore/excore calibration procedure should be established such that the AFD Technical Specification limits, less about 1% margin on positive and negative limits, should be available. Sixteen hours is viewed to be adequate time interval to allow data retrieval and avoid potential Technical Specification constraints.

The AFD for Turkey Point Units 3 and 4 are based on Constant Axial Offset Control (CAOC). CAOC involves maintaining the AFD within a tolerance band, ± 5%, around a burnup-dependent target to minimize the variation of the axial power distribution. This allowed range of AFD is used in the nuclear design reload process to confirm that operation within these limits produce power distributions that meet safety analysis requirements. As stated earlier, AFD is monitored to assure that the FQ peaking factors are acceptable between incore measurement intervals. Note that the action required by Technical Specification 3.2.2, Heat Flux Hot Channel Factor - FQ, when FQ is exceeded, is to reduce thermal power 1% for every percent that FQ exceeds its limit. For the AFD calibration, the power reduction coupled with limits placed in the allowed AFD during the incore/excore test prevents exceeding the FQ limits.

Just as with Technical Specification Special Test Exceptions 3/4.10, Technical Specification 3/4.2.1 is less restrictive during surveillance testing and excore detector calibrations due to the low probability of accidents occurring during this operation.

The currently approved Technical Specifications for Comanche Peak Unit 1 correctly references this footnote with the applicable limiting condition of operation which discusses Acceptable Operation Limits and cumulative penalty deviation time. This erroneous footnote relationship in the Standard Technical Specifications was discovered while preparing the Comanche Peak Technical Specifications prior to their issuance. The error is also corrected in the January 9, 1991, draft edition of NUREG-1431, Westinghouse Owner's Group Methodically Engineered, Restructured, and Improved Technical Specifications (MERITS). FPL is preparing a request for an amendment to the Turkey Point Technical Specifications to revise Technical Specification 3.2.1.

(5) A discussion which justifies the duration of the request.

This temporary waiver of compliance is requested concurrent with a Florida Power and Light proposed license amendment to support this change. The duration of the waiver of compliance is from the date of issuance of this waiver to the date the license amendment is approved by the NRC.

In accordance with TS Table 4.3-1, an incore/excore calibration is required to be performed: 1) monthly, if a single point comparison of incore to excore shows that the absolute difference is greater than or equal to 3% AFD, or 2) at least once per quarter. This waiver may potentially be exercised for a limited time interval each month, during incore/excore calibration of the Nuclear Instrumentation System (NIS) detectors. FPL does not expect to perform this calibration on a monthly basis if the temporary waiver is granted, as the quarterly calibration's accuracy is believed to be adequate to preclude the need for monthly recalibration.

(6) The basis for the licensee's conclusion that the request does not involve a significant hazards consideration.

Attachment 2 provides the determination that the proposed temporary waiver of compliance does not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; (2) create the probability of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety; and therefore does not involve a significant hazards determination as defined in 10 CFR 50.92.

(7) The basis for the conclusion that the request does not involve irreversible environmental consequences.

This temporary waiver of compliance does not result in any physical change to the plant. Issuance of this waiver will not place the plant in a condition that compromises the health and safety of plant personnel or the general public. Due to the administrative nature of this request, issuance of this waiver does not involve irreversible environmental consequences.

ATTACHMENT 2

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

The commission has provided standards for determining whether a significant hazards consideration exists (10 CFR 50.92(c)). A proposed change to an operating license for a facility involves no significant hazards consideration, if operation of the facility in accordance with the proposed change would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create a possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety. FPL has determined that operation of the facility in accordance with this temporary waiver of compliance would not:

(1) **involve a significant increase in the probability or consequences of an accident previously evaluated.**

This proposed temporary waiver of compliance does not involve a significant increase in the probability or consequences of an accident previously evaluated. The proposed change does not affect any equipment whose malfunction is postulated to initiate an accident or prevent an accident from occurring. Changes in axial flux difference due to power changes and control rod motion, like that in the excore detector calibration, are part of normal and anticipated plant behavior. Therefore, this change does not cause a significant increase in the probability of occurrence of any previously evaluated accident.

Axial flux difference is used to assure that peaking factors and axial power distributions are within the limits used as input to various Condition II, III, and IV events. Analyses outside the AFD target band, but within the Accepted Operation Limits of Figure 3.2-1, for up to 1 hour, are included in the reload design and safety analyses. The proposed change permits operation outside of the AFD target band within the Accepted Operation Limits of Figure 3.2-1, for up to 16 hours while calibrating the excore detectors, rather than the 1 hour allowed during normal operation. Just as with Special Test Exceptions, Technical Specification 3/4.2.1 is less restrictive during excore calibration due to the low probability of accidents occurring during this calibration, (which will be performed at less than or equal to 90% power). Therefore, the consequences of previously analyzed accidents will not be significantly increased by the proposed temporary waiver of compliance.

(2) **create the possibility of a new or different kind of accident from any accident previously evaluated.**

The proposed temporary waiver of compliance does not create the possibility of a new or different kind of accident from any accident previously evaluated. The temporary waiver of compliance does not change any plant equipment or operations. Therefore, no possibility of creating a new or different type of accident would result from this proposed temporary waiver of compliance.

3) **involve a significant reduction in a margin of safety.**

The proposed temporary waiver of compliance does not involve a significant reduction in the margin of safety. The consequences of core accidents are based on the limiting assumptions for the core peaking factors. No changes to the peaking factors are required to support this proposed temporary waiver of compliance. The proposed change permits operation outside of the AFD target band, within the Accepted Operation Limits of Figure 3.2-1, for up to 16 hours while calibrating the excore detectors, rather than the 1 hour allowed during normal operation. Just as with Special Test Exceptions, Technical Specification 3/4.2.1 is less restrictive during excore calibration due to the low probability of accidents occurring during this calibration, (which will be performed at less than or equal to 90% power). In addition, excore calibration is a controlled plant evolution with enhanced operator and Reactor Engineering oversight. Therefore, the proposed change does not involve a significant reduction in the margin of safety.

Based on the above, FPL has determined that the proposed temporary waiver of compliance does not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; (2) create the probability of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety; and therefore does not involve a significant hazards determination as defined in 10 CFR 50.92.