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AUTH.NAME AUTHOR AFFILIATION
PLUNKETT,T.F. Florida Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
Document Control Branch (Document Control Desk)

SUBJECT: Forwards response to NRC questions during 910307 telcon re 901219 application for amends to Licenses DPR-31 & DPR-41, revising TS Section 2.2 on limiting safety sys settings & Section 3/4.3.2 on ESFAS instrumentation.

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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
Reactor Protection System Setpoints

By letter L-90-417, dated December 19, 1990, Florida Power and Light (FPL) submitted a request to amend the Turkey Point Technical Specifications. The proposed license amendment revises Section 2.2, Limiting Safety System Settings and Section 3/4.3.2, Engineered Safety Features Actuation System Instrumentation.

On February 20, 1991, the methodology and setpoints presented in the proposed license amendment were discussed during a conference call between the NRC, Westinghouse, and FPL. Additional discussions took place during a second conference call on March 7, 1991. Attached please find the NRC questions from the March 7 conference call and FPL's responses to these questions.

Should there be any questions, please contact us.

Very truly yours,

T. F. Plunkett
Vice President
Turkey Point Nuclear

TFP/DPS/ds

Attachment

cc: Stewart D. Ebneter, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

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Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Setpoints

ATTACHMENT 1

RESPONSES TO NRC QUESTIONS DISCUSSED MARCH 7, 1991

FPL's responses to questions raised during the March 7 conference call are as follows:

Question 1

Pressurizer Water Level High - Numerical values and methodology in relation to the NRC position as communicated in the conference call held on 02/20/91 and as stated in NRC Regulatory Guide (RG) 1.105 (basically, upper calibration tolerance band + RD should be less than or equal to the Allowable Value).

If new numbers are proposed, discuss basis for those numbers and the relationship to the 95% criteria/confidence level.

Response to Question 1

The FPL/Westinghouse response stated that the Westinghouse methodology for determining the Allowable Value for a function is consistent with the requirements of RG 1.105 and ISA S67.04-1987. Two approaches are used to calculate the difference between the Allowable Value and the Nominal Trip Setpoint.

The first approach is the simple arithmetic summation of the process rack uncertainty terms that can be verified during the calibration and analog/digital channel operational tests of protection functions. These uncertainty terms are RCA, RCSA, RMTE and RD, as defined in WCAP-12745, "Westinghouse Setpoint Methodology for Protection Systems - Turkey Point Units 3 & 4." WCAP-12745 was transmitted to the NRC in FPL letter L-90-417, dated December 19, 1990. The definition of the first trigger value is:

$$T1 = RCA + RMTE + RCSA + RD.$$

This value meets the requirements explicitly. However, Westinghouse carries the determination of the Allowable Value one step further.

A second trigger value is calculated based on assuming that the transmitter behaves in a normal, predictable manner and starts the calculation from the Safety Analysis Limit (SAL). This is an additional factor of conservatism which is not required by RG 1.105 or ISA S67.04-1987. The equation for this second calculation is:

$$T2 = TA - (A + S^2)^{1/2} - EA.$$

The smaller of the two values (T1 or T2) is then selected as the difference between the Allowable Value and the Nominal Trip Setpoint. This is a more conservative approach. The difference is never larger than the arithmetic summation of the process rack uncertainties evaluated during the calibration and testing phases. The difference may be smaller depending on the magnitude of the margin present in the determination of the Channel Statistical Allowance (CSA).

The use of T2 for determination of the Allowable Value does not imply that the process rack drift term is unaccounted for (it is still explicitly allowed for in the CSA calculation), but rather this second check is necessary to account for the use of the square-root-of-the-sum-of-the-squares (SRSS) technique in the determination of the CSA.

A channel uncertainty calculation is considered acceptable when the CSA is less than or equal to the Total Allowance (the difference between the SAL and the Nominal Trip Setpoint). But this calculation does not take into account the difference in effect between the two calculation techniques (SRSS vs. arithmetic summation).

The T2 calculation reflects a conservative determination of the Nominal Trip Setpoint/Allowable Value difference using an SRSS viewpoint. The comparison and utilization of the smaller of the two values accounts for the differences in the two techniques and results in a conservative determination of the Allowable Value.

Question 2

What other parameters are subject to the same situation as Pressurizer Level High - please discuss the same points as (1) above.

Response to Question 2

Any protection function where the trigger value is determined by T2 will result in the difference between the Nominal Trip Setpoint and the Allowable Value being less than the sum of the calibration tolerance and rack drift. As noted in the response above, this is a conservative determination of the Allowable Value.

The magnitude of T2 is sensitive to the magnitude of the margin present in the uncertainty calculation, (i.e., the larger the positive difference between the Total Allowance and the CSA, the larger the magnitude of T2). With the Westinghouse methodology, the smaller of the two trigger values is used for the

determination of the Allowable Value. This is conservative when the trigger value is T2 since a plant investigation of the operability of the channel is required before the design values for calibration and rack drift are exceeded. Use of T2 as the trigger value requires the performance of better "as left" calibrations than that assumed in the uncertainty calculation in order to allow more room for rack drift.

The protection functions which have Allowable Values determined by T2 are: Overtemperature delta-T, Overpower delta-T, Pressurizer Water Level - High, Loss of Flow, Steam Flow/Feed Flow Mismatch, Differential Pressure Between Steam Header & Steam Lines - High, High Steam Flow, and Tavg - Low-Low. However, it should be noted that the Allowable Values noted in WCAP-12745 are acceptable based on past operational experience.

Question 3

Steam Flow High and Steam/Feed Flow Mismatch - Is the proposed trip setpoint the same as in the current Technical Specifications - what is the current Technical Specification value, in terms of % flow. If the proposed trip setpoint is less conservative than the existing trip setpoint - provide additional basis including effect whether direct or indirect on accident analysis and assumptions - submittal mentions sufficient margin; if TA is based on judgement, please provide basis for margin.

Response to Question 3

The current trip setpoint for Steam Flow - High is: a differential pressure (delta-p) corresponding to 20% Steam Flow (0.64×10^6 lbs/hr) at 0% load, increasing linearly to a delta-p corresponding to 120% Steam Flow (3.84×10^6 lbs/hr) at 100% load. The revised setpoint documented in WCAP-12745 is: a delta-p corresponding to 40% Steam Flow from 0 to 20% load, increasing linearly to a delta-p corresponding to 120% Steam Flow at 100% load. Thus there is a significant difference between the two setpoints at 0% load (20% Steam Flow) with the revised setpoint higher than the current setpoint. However, at 20% load and above, the revised setpoint is conservative, i.e., actuation will occur at a steam flow lower than the current setpoint. In the event of a large steamline break at 0% Rated Thermal Power (RTP), steam flow increases considerably above the trip setpoint noted in WCAP-12745.

The current setpoint for Steam Flow/Feed Flow Mismatch - High is a mismatch of 20% Steam Flow (0.64×10^6 lbs/hr). The setpoint noted in WCAP-12745 is a mismatch of 20% Steam Flow. There is no difference between the current Technical Specifications (noted by Amendment Nos. 137 & 132, dated August 28, 1990) and WCAP-12745.

Question 4

Reactor trip system interlocks P-6, P-7, P-8, P-10 - Provide basis for the Allowable Values.

Response to Question 4

The difference between the Allowable Value and Nominal Trip Setpoint for a permissive is the same as for the protection function providing the input to the permissive bistable. For example, P-10 is based on input from the NIS Power Range channel. Thus the same trigger value (T1 or T2) is used to determine the Allowable Value for P-10. Since permissives are not required to be operable in adverse environmental conditions, only steady state errors are used to determine the trigger values. A list of protection channels vs permissive, for evaluation of trigger values is as follows:

P-6	Historical value (4 x 10-11 amps)
P-7, P-8, P-10	NIS Power Range High Reactor Trip

Question 5

Evaluation of Differential Pressure Between Steam Header & Steam Lines - High and Pressurizer Water Level - High

Response to Question 5

The NRC Staff was unable to reproduce the exact values noted in the various tables of WCAP-12745 for some of the functions. The values provided in WCAP-12745 are based on a first decimal place precision level. The computer programs used to perform the calculations provide results for two decimal places. However, indication of values to that degree implies a level of precision which is not representative of the input. Therefore, rounded values were provided for the tables which represent the level of precision noted (one decimal place). A review of all calculation input values and results has been performed by Westinghouse. The results of the calculations and this review are noted in WCAP-12745.

Question 6

High Differential Pressure - Values proposed for S and Z already challenge the TA equation, please clarify.

Response to Question 6

Several functions have large values of S or Z when compared to the magnitude of TA. This would indicate that if Equation 2.2-1 (page 1 of Appendix A of WCAP-12745) was solved, there would be no margin for an "as measured" rack drift term of any significant magnitude. This does not indicate that there is no margin for rack drift, but rather, it points out the significant differences due to two different treatments of the instrument uncertainties. When this situation arises (e.g., the two protection functions noted above) the Allowable Value is determined by T2. This calculation is predicated on the normal, random behavior of the transmitter.

Equation 2.2-1 is very conservatively based on the assumption that the transmitter has drifted to the maximum assumed in the uncertainty calculation and that the drift is in the non-conservative direction. These assumptions are made when the value of S is selected from Table 2.2-1 or Table 3.3-3 of Appendix A of WCAP-12745. However, the option of performing a measurement for determining the magnitude and direction of the transmitter drift through the utilization of "as found/as left" data is available as noted in the Technical Specifications (ie. S can be a measured value.). If the current drift status of the transmitter is not investigated, the values for S and Z for certain functions would result in Equation 2.2-1 not being satisfied for any non-conservative rack drift. In this event, the protection channel would be determined to be inoperable and the corresponding action requirements must be satisfied.

The satisfaction of Equation 2.2-1 is not required unless the Allowable Value is exceeded. This is considered acceptable based on the assumption that the transmitter and racks are exhibiting normal, random behavior. This is considered a valid assumption until a history is generated for a device (transmitter or process rack loop) which notes otherwise.