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SUBJECT: Application for amends to licenses DPR-31 & DPR-41, implementing revised thermal design procedure & SG water level low-low setpoint.

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FPL

SEP 28 1995

L-95-250
10 CFR 50.36
10 CFR 50.90

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
Proposed License Amendments -
Implementation of the Revised Thermal Design Procedure
and Steam Generator Water Level Low-Low Setpoint

By letter L-95-131 dated May 5, 1995, Florida Power and Light Company (FPL) requested that Appendix A of Facility Operating Licenses DPR-31 and DPR-41 be amended to revise the Turkey Point Units 3 and 4 Technical Specification (TS) 2.1.1, Safety Limit - Reactor Core; TS 2.2, Limiting Safety System Settings - Reactor Trip System Instrumentation Setpoints; TS 3/4.2.5 Power Distribution Limits - DNB Parameters; TS 3/4.3.2 Engineered Safety Features Actuation System Instrumentation and the associated BASES. The proposed revision to the Technical Specifications includes (a) the implementation of Westinghouse's NRC approved Revised Thermal Design Procedure (RTDP), and (b) a revision to the Steam Generator Water Level Low-Low trip setpoint. As requested during recent conversations with the Staff, Attachment 1 provides FPL's response to the questions developed as a result of the Staff's review.

On August 24, 1995, the NRC issued Amendments No. 176 and No. 170 to Facility Operating Licenses DPR-31 and DPR-41 for Turkey Point Units 3 and 4, respectively. Amendments No. 176 and No. 170 revised the setpoint presentation format for Reactor Protection System and Engineered Safety Features Actuation System instrumentation setpoints contained in TS Tables 2.2-1 and 3.3-3, from a five column format to a two column format. As a result, some of the proposed changes to the Technical Specifications submitted by FPL letter L-95-131 for implementation of the RTDP and Steam Generator Water Level Low-Low trip setpoint are affected. Amendment Nos. 176 and 170 removed any reference to the Total Allowance, Z, and S process parameters from the Technical Specifications, therefore, a revised proposed license amendment package was developed deleting any reference to changes to these parameters. Proposed changes to Total Allowance, Z, and S terms will be reviewed pursuant to 10 CFR 50.59 to determine if prior NRC approval is necessary, as discussed in the Safety Evaluation Report issued for approval of Amendments No. 176 and 170. Attachment 2 provides a revised description of the

amendment request. Attachment 3 provides a revised no significant hazards determination in support of the proposed Technical Specification changes. Attachment 4 provides the revised proposed Technical Specifications.

The proposed amendments have been reviewed by the Turkey Point Plant Nuclear Safety Committee and the FPL Company Nuclear Review Board.

Should there be any questions on this submittal, please contact us.

Very truly yours,

T. F. Plunkett
Vice President
Turkey Point Plant

OIH

Attachments

cc: S. D. Ebneter, Regional Administrator, Region II, USNRC
T. P. Johnson, Senior Resident Inspector, USNRC, Turkey Point Plant
W. A. Passetti, Florida Department of Health and Rehabilitative Services

STATE OF FLORIDA)
) ss.
COUNTY OF DADE)

T. F. Plunkett being first duly sworn, deposes and says:

That he is Vice President, Turkey Point Plant, of Florida Power and 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.

T. F. Plunkett

Subscribed and sworn to before me this

28th day of September, 1995.

James E. Knorr

Name of Notary Public (Type or Print)

JAMES E. KNORR
MY COMMISSION # CC 434300
EXPIRES: January 22, 1999
Bonded Thru Notary Public Underwriters

NOTARY PUBLIC, in and for the County of Dade, State of Florida

My Commission expires January 22, 1999
Commission No. CC 434300

T. F. Plunkett is personally known to me.

ATTACHMENT 1

RESPONSE TO FOLLOW-UP QUESTIONS ON
IMPLEMENTATION OF THE REVISED THERMAL DESIGN PROCEDURE
AND STEAM GENERATOR WATER LEVEL LOW-LOW SETPOINT
PROPOSED LICENSE AMENDMENTS

NRC QUESTION:

Does the licensee have a single consolidated instrument setpoint document which contains all setpoints, including design bases, both safety and non-safety related?

FPL RESPONSE:

Turkey Point has a controlled Instrument Setpoint List (Drawing No. 5610 3/4-M-313) which contains all instrument setpoints, both safety and non-safety related. The Instrument Setpoint List does not contain the design bases for the setpoints, however, references to the appropriate design bases documentation is provided.

NRC QUESTION:

Has the licensee reverified the assumptions and inputs used in developing the proposed setpoint changes?

FPL RESPONSE:

All documentation pertaining to implementation of RTDP was reviewed by FPL during development and prior to issuance of WCAP-13719, Revision 1, "Westinghouse Revised Thermal Design Procedure Instrument Uncertainty Methodology for Turkey Point Units 3 and 4," by Westinghouse. At a minimum, all assumptions and inputs used in the RTDP submittal were reverified to be complete and consistent with Turkey Point Units 3 and 4 hardware and procedures.

NRC QUESTION:

Is anyone (AE or NSSS) other than the licensee involved in the Amendment changes?

FPL RESPONSE:

Westinghouse (NSSS Supplier) was involved in every aspect of the proposed Amendment. Westinghouse calculated the uncertainties on power, pressure, temperature, and flow and used them as inputs to recalculate the Core Thermal Limits using the approved RTDP methodology. Westinghouse recalculated the Overpower and Overtemperature Delta-T trip setpoints using the RTDP based Core Thermal Limits. All affected Chapter 14 transients were reanalyzed by Westinghouse with the new Overpower and Overtemperature-Delta-T trip setpoints and acceptable results were obtained. Westinghouse prepared the Proposed License Amendment which was subsequently reviewed and approved by FPL.

ATTACHMENT 2

DESCRIPTION OF AMENDMENT REQUEST

INTRODUCTION

Florida Power and Light Company (FPL) proposes to change Turkey Point Units 3 and 4 Technical Specification (TS) 2.1.1, Reactor Safety Limit; TS 2.2, Limiting Safety System Settings - Reactor Trip System Instrumentation Setpoints; TS 3/4.2.5 Power Distribution Limits - DNB Parameters; TS 3/4.3.2 Engineered Safety Features Actuation System Instrumentation and the associated BASES. The proposed revisions to the Technical Specifications include (a) the implementation of the NRC approved Westinghouse's Revised Thermal Design Procedure (RTDP) and (b) a revision to the Steam Generator Water Level Low-Low trip setpoint.

The Revised Thermal Design Procedure statistically combines the uncertainties on power, pressure, temperature, and flow, with the Departure from Nucleate Boiling (DNB) correlation uncertainty to calculate the Departure from Nucleate Boiling Ratio (DNBR) design limit. Assumptions used in generating the new DNB limit also include reduced Reactor Coolant System flow, and an increase in $F_{\Delta H}$. These assumptions are conservative with respect to plant operation and a separate Technical Specification submittal is being considered to implement these changes following completion of the reanalysis of the Large Break Loss of Coolant Accident [LBLOCA]. As a result of the changes to the input assumptions and methodology used to determine the DNBR limit, new core thermal limits and Overtemperature ΔT and Overpower ΔT reactor trip setpoints were calculated. Additionally, a relaxation in the DNBR monitoring Technical Specification is proposed which more accurately reflects the intent of the specification and capability of monitoring DNB parameters.

The Steam Generator Narrow Range Water Level Process Measurement Accuracy (PMA) term and corresponding protection system setpoints have been recalculated to account for additional uncertainties as addressed later in this submittal.

The changes that will be addressed for the proposed amendments are as follows:

- Overtemperature and Overpower ΔT Setpoints and Uncertainties
  The RTDP was employed which generated revisions to the Core Safety Limits (TS Figure 2.1-1) and Overtemperature and Overpower ΔT setpoints and associated uncertainties. The revised setpoints provide additional operating margin for the proposed Technical Specification Tables 2.2-1 and 3.3-3.

- Steam Generator Process Measurement Accuracy (PMA) The current Model 44F Steam Generator Narrow Range Water Level PMA uncertainty terms and corresponding protection system setpoints have been recalculated to account for additional uncertainties. PMA uncertainties are based on the type of measurement that is performed but are not directly related to the accuracy of the measurement device; however, overall instrument channel accuracy is affected.

- Reactor Coolant System Loss of Flow Setpoints The RTDP was employed which generated additional DNB margin. RTDP is utilized in determining additional operational margin in the DNB parameters and the Loss of Flow trip setpoint identified in Technical Specifications 3/4.2.5 and 2.2.1.

DISCUSSION

In order to increase the margins associated with the DNB limits, the changes to the Technical Specifications shown in the attached are being proposed. The proposed revisions involve the following:

a) use of upgraded process instrumentation equipment (implementation of Eagle-21, etc.),
b) use of the RTDP Methodology,
c) incorporation of additional PMA uncertainties, or
d) an editorial correction.

By changes to surveillance procedures and replacement of instrumentation, it has been possible to provide additional operational margin to the limits associated with the measurement and indication of RCS Flow.

The RTDP takes advantage of the conservative use of statistical combination of values for reactor power, RCS flow, temperature and pressure to calculate the DNBR limit. Changes in hot channel factors and RCS flow cause the DNB core limits to change. The RTDP methodology uses the same methodology as defined in WCAP-8567, "Improved Thermal Design Procedure", as approved by the NRC. With the change to the core thermal limits, the Overpower ΔT and Overtemperature ΔT reactor trip setpoints are changed in the analysis. The values of the setpoints used in the safety analysis as well as the Reactor Core Thermal Limits revision are reflected in the revised Technical Specification pages.

The Overtemperature ΔT reactor trip function is defined in Table 2.2-1, "Reactor Trip System Instrumentation Trip Setpoints", of the Turkey Point Units 3 and 4 Technical Specifications. This reactor trip function provides core protection to prevent DNB for all combinations of pressure, power, flow, coolant temperature when pressure is within the range defined by the Pressurizer High and Low Pressure trips. The setpoint is automatically varied with: (1) coolant temperature to correct for temperature induced changes in density and heat capacity of water, and includes dynamic compensation for piping delays from the core to the loop temperature detectors, (2) pressurizer pressure, and (3) axial power distribution.

The Overpower ΔT reactor trip function is also defined in Table 2.2-1 of Turkey Point Units 3 and 4 Technical Specifications. This reactor trip function is designed specifically to ensure operation within the fuel centerline temperature design limit. This is accomplished by controlling the gross core thermal power within a prescribed limit

(118 percent of nominal full power). Overpower ΔT provides assurance of fuel integrity (i.e., no fuel pellet melting and less than 1% cladding strain) under all credible overpower conditions, limits the required range for Overtemperature ΔT trip, and provides a backup to the Power Range Neutron Flux High Trip. The setpoint is automatically varied with: (1) density and heat capacity of water, and (2) rate of change of temperature for dynamic compensation of piping delays from the core to the loop temperature detectors to ensure that the allowable heat generation rate (kw/ft) is not exceeded.
The limits on the DNB-flow parameter assure that the parameter is maintained within the normal steady-state envelope of operation assumed in the transient and accident analyses. This limit is consistent with the UFSAR assumptions and has been demonstrated adequate for maintaining the required minimum DNBR above the applicable design limits throughout each analyzed transient.

All of the limits have been recalculated with the use of the NRC approved setpoint methodology, WCAP-12745, "Westinghouse Setpoint Methodology for Protection Systems - Turkey Point Units 3 and 4." The methodology used is the "square root of the sum of the squares" which has been utilized in other submittals to the NRC. This methodology has also been used in WCAP-10395, "Statistical Evaluation of LOCA Heat Source Uncertainty," and WCAP-8567, "Improved Thermal Design Procedure (ITDP)." RTDP uncertainties are calculated using the same methodology employed for ITDP. WCAP-8567 is approved by the NRC noting acceptability of statistical techniques for the application requested. Also, various American National Standards Institute (ANSI), American Nuclear Society (ANS), and Instrument Society of America (ISA) standards approve the use of probabilistic and statistical techniques in determining safety-related setpoints (specifically ANSI/ANS Standard 58.4-1979, "Criteria for Technical Specifications for Nuclear Power Stations," and ISA Standard S67.04, 1987, "Setpoints for Nuclear Safety-Related Instrumentation Used in Nuclear Power Plants").

The methodology used in this license amendment is essentially the same as that used for South Carolina Electric & Gas Company Virgil C. Summer Plant in August, 1982: approved via NUREG-0717, Supplement No. 4, "Safety Evaluation Report related to the Operation of Virgil C. Summer Nuclear Station, Unit No. 1," Docket No. 50-395, August, 1982.

FPL has included in this submittal WCAP-13719, Rev. 1, and WCAP-13718, Rev. 1, entitled "Westinghouse Revised Thermal Design Procedure Instruments Uncertainty Methodology for Turkey Point Units 3 and 4." These WCAPs document the plant specific application of the NRC approved RTDP methodology.

PROPOSED TECHNICAL SPECIFICATION CHANGES

FPL proposes to change the following Technical Specifications in the proposed amendments:

1. TS Figure 2.1-1, "Reactor Core Safety Limits - Three Loops in Operation": Revise Figure 2.1-1 to reflect new Core Thermal Limits as a result of using the RTDP Methodology.

   Justification: The current licensing basis utilizes the Standard Thermal Design Procedure (STDP) which uses the W-3 DNB correlation to generate the Core Thermal Limits. STDP assumes that the peaking factors are in their most conservative condition. Uncertainties on power, pressure, and RCS temperature are accounted for in the accident analysis initial conditions and are not reflected in the Core Thermal Limits. In contrast, the RTDP statistically combines the initial condition uncertainties of power, temperature, pressure, Reactor Coolant System (RCS) flow as well as peaking factor uncertainties. In addition, RTDP uses the WRB-1 DNB correlation which yields better DNB results because of its tighter range of applicability (i.e., core flow, temperatures, pressures). The net result is a large increase in DNB margin (i.e., the difference between the design limit and the safety analysis limit DNBR). Note that there is an insignificant change in the Reactor Core Safety Limits because they are based on the safety analysis DNBR limit and not the design (licensing) limit DNBR. Thus, a comparison of the current Reactor Core Safety Limits to the proposed limits does not in any way reflect the actual gain of DNB margin that is realized by switching from STDP to RTDP.

   Finally, the Reactor Core Safety Limits form the basis for the reactor protection system Overtemperature ΔT and Overpower ΔT setpoints. Therefore, the justification for changing TS 2.1-1 is to ensure that the correct basis for the Overtemperature ΔT and Overpower ΔT setpoints is presented, even though the gains for these setpoints are unchanged from the current Technical Specifications.

2. TS Table 2.2-1, "Reactor Trip System Instrumentation Trip Setpoints", Functional Unit 10, Reactor Coolant Flow-Low: Revise the Allowable Value from "88.7% of loop design flow" to "88.8% of loop design flow".

   Justification: Use of the RTDP Methodology provides additional operating margin to Turkey Point's Technical Specifications by generating increased DNB margin. The RTDP takes advantage of conservative use of statistical combination of values for reactor power, RCS flow, temperature and pressure to calculate the DNBR limit. Changes in hot channel factors and RCS flow cause the DNB core thermal limits to change. This methodology was approved by the NRC in WCAP-11397-P-A and uses

the same methodology as defined in WCAP-8567, "Improved Thermal Design Procedure." With the change to the core thermal limits, the Overpower ΔT and Overtemperature ΔT reactor trip setpoints are changed in the analysis. The values of the setpoints used in the safety analysis as well as the Reactor Core Limits revision are reflected in the revised Technical Specifications.

The change to the Allowable Value reflects use of the additional margin created by the RTDP and reallocation of instrument uncertainties to provide flexibility in plant Instrumentation & Control operations.

3. TS Table 2.2-1, "Reactor Trip System Instrumentation Trip Setpoints", Functional Unit 11, Steam Generator Water Level Low-Low, and Functional Unit 12, Steam/Feedwater Flow Mismatch Coincident With Steam Generator Water Level-Low: Revise the following values:

   a) Trip Setpoint from "≥15%" to "≥10%", and
   b) Allowable Value from "≥13.2%" to "≥8.9%".

Justification: Westinghouse identified that the potential exists that insufficient margin may have been included in the PMA term for Steam Generator Water Level instrumentation uncertainty calculations. This would impact the protection functions which use this parameter, i.e., Steam Generator Water Level Low and Low-Low setpoints. Previously a value of ±2.0% span was used for this term in setpoint uncertainty calculations for all models of steam generator design. This value was based on various process parameters which are determined by specific plant operating conditions.

With the inclusion of the additional PMA terms and their treatment as a bias, the existing trip setpoints for Steam Generator Water Level Low and Low-Low provide margin to protect the existing safety analysis limits. The Turkey Point Steam Generator Water Level Low-Low protection system setpoints have been recalculated to account for additional PMA uncertainties.

In previous calculations the PMA was assumed to be bounded by a ±2.0% span allowance. New calculations have been performed which explicitly identify the impact of the PMA term on the Channel Statistical Allowance. The reduction in Steam Generator Water Level Low-Low trip setpoint has been analyzed in Chapter 14 analyses of the Updated Final Safety Analysis Report (UFSAR) and FPL has confirmed that sufficient margin exists to maintain safe plant operation. As a result of these calculations, margin has been re-allocated to improve plant operations by reducing the Steam Generator Water Level Low-Low trip setpoint and accompanying Allowable Value while still maintaining a margin of safety.

4. TS Table 2.2-1, "Reactor Trip System Instrumentation Trip Setpoints", NOTE 1, OVERTEMPERATURE ΔT: Revise the following values:

a) K_1 of "1.25", instead of "1.095",
b) K_2 of "0.016", instead of "0.0107",
c) K_3 of "0.0011", instead of "0.000453",
d) Footnote (1): to read "$q_t - q_b$ between -46% and +2%," instead of reading "$q_t - q_b$ between -14% and +10%,"
e) Footnote (2): to read "$q_t - q_b$ exceeds -46%," instead of reading "$q_t - q_b$ exceeds -14%",
f) Footnote (3): to read "$q_t - q_b$ exceeds +2%", instead of reading "$q_t - q_b$ exceeds +10%", and
g) Footnote (3): the wording "the ΔT trip setpoint shall be automatically reduced by 2.3%" instead of reading "the ΔT trip setpoint shall be automatically reduced by 1.5%"

Justification: Use of the RTDP Methodology provides additional operating margin to Turkey Point's Technical Specifications by generating increased DNB margin. The RTDP takes advantage of the conservative use of statistical combination of values for reactor power, RCS flow, temperature and pressure to calculate the DNBR limit. This methodology was approved by the NRC in WCAP-11397-P-A and uses the same methodology as defined in WCAP-8567, "Improved Thermal Design Procedure." With the change to the core thermal limits, the Overpower ΔT and Overtemperature ΔT reactor trip setpoints are changed in the analysis. The values of the setpoints used in the safety analysis as well as the Reactor Core Limits revision are reflected in the revised Technical Specifications.

The existing setpoints are relaxed to provide operational benefits taking advantage of the additional margin gained by implementing the Revised Thermal Design Procedure methodology. The increased value of K_1 to 1.25 (increased from 1.095) permitted f(ΔI) wings of -46% and +2% (versus -14% and +10%) which continue to maintain sufficient margin between the Relaxed Axial Offset Control (RAOC) operating band and the f(ΔI) penalty deadband.

5. TS Table 2.2-1, "Reactor Trip System Instrumentation Trip Setpoints", OVERTEMPERATURE ΔT, NOTE 2: Change the % of instrument span from "1.5%" to "0.73%".

Justification: Use of the RTDP Methodology provides additional operating margin to Turkey Point's Technical Specifications by generating increased DNB margin. The RTDP takes advantage of the conservative use of statistical combination of values for reactor power, RCS flow, temperature and pressure to calculate the DNBR limit. Changes in hot channel factors and RCS flow cause the DNB core limits to

change. This methodology was approved by the NRC in WCAP-11397-P-A and uses the same methodology as defined in WCAP-8567, "Improved Thermal Design Procedure." With the change to the core thermal limits, the Overpower ΔT and Overtemperature ΔT reactor trip setpoints are changed in the analysis. The values of the setpoints used in the safety analysis as well as the Reactor Core Limits revision are reflected in the revised Technical Specifications.

Note 2 has been revised to reflect changes to the Allowable Value as calculated utilizing the methodology defined in WCAP-12745, "Westinghouse Setpoint Methodology for Protection Systems Turkey Point Units 3 and 4." Changes to the Allowable Value reflect use of additional margin created by the RTDP and reallocation of instrument uncertainties to provide flexibility in plant Instrumentation & Control operations.

6. TS Table 2.2-1, "Reactor Trip System Instrumentation Trip Setpoints", NOTE 3: OVERPOWER ΔT: Revise the following values:

   a) K_4 from "1.09" to "1.10", and
   b) K_6 from "0.00068" to "0.00232".

Justification: Use of the RTDP Methodology provides additional operating margin to Turkey Point's Technical Specifications by generating increased DNB margin. The RTDP takes advantage of the conservative use of statistical combination of values for reactor power, RCS flow, temperature and pressure to calculate the DNBR limit. Changes in hot channel factors and RCS flow cause the DNB core limits to change. This methodology was approved by the NRC and uses the same methodology as defined in WCAP-8567, "Improved Thermal Design Procedure." With the change to the core thermal limits, the Overpower ΔT and Overtemperature ΔT reactor trip setpoints are changed in the analysis. The values of the setpoints used in the safety analysis as well as the Reactor Core Limits revision are reflected in the revised Technical Specifications.

The existing setpoints are relaxed to provide operational benefits taking advantage of the additional margin gained by implementing the RTDP methodology.

7. TS Table 2.2-1, "Reactor Trip System Instrumentation Trip Setpoints", NOTE 4: Change % of instrument span from "1.4%" to "0.4%."

Justification: Note 4 has been revised to reflect changes to the Allowable Value as calculated utilizing the methodology defined in WCAP-12745, "Westinghouse Setpoint Methodology for Protection Systems Turkey Point Units 3 and 4." Changes to the Allowable Value reflect use of additional margin created by the RTDP and reallocation of instrument uncertainties to provide flexibility in plant Instrumentation and Control operations.

8. TS SURVEILLANCE REQUIREMENT 4.2.5.1: Revise to read as follows:

4.2.5.1 Reactor Coolant System T_{avg} and Pressurizer Pressure shall be verified to be within their limits at least once per 12 hours.

4.2.5.2 RCS flow rate shall be monitored for degradation at least once per 12 hours.

Justification: Technical Specification 3/4.2.5 requires that the flow parameter of 277,900 gpm be verified within the limits once per 12 hours. The value of 277,900 gpm for reactor coolant system flow is the precision flow calorimetric limit and was not intended to be utilized as the limit for the daily shift surveillance. The SURVEILLANCE REQUIREMENTS and BASES of TS 3/4.2.5 are revised to provide clarification of the surveillance. This surveillance requirement is similar to that previously submitted and approved by the NRC for the Shearon Harris and Vogtle plants' Technical Specifications. TS SURVEILLANCE REQUIREMENT 4.2.5.2 becomes 4.2.5.3 to accomodate the additional surveillance requirement.

9. TS SURVEILLANCE REQUIREMENT 4.2.5.3: Revise to read as follows:

4.2.5.4 After each fuel loading, and at least once per 18 months, the RCS flow rate shall be determined by precision heat balance after exceeding 90% RATED THERMAL POWER. The measurement instrumentation shall be calibrated within 90 days prior to the performance of the calorimetric flow measurement. The provisions of 4.0.4 are not applicable for performing the precision heat balance flow measurement.

Justification: With incorporation of the RTDP analyses, the RCS Low Flow trip setpoint of TS Table 2.2-1, Item 10, was evaluated to account for changes in performing the precision flow calorimetric which is used for calibration of the flow transmitter which validates the trip setpoint. Additions to the surveillance requirement provide clarification as to the acceptable methodology of performing the flow rate verification.

10. TS Table 3.3-3, "Engineered Safety Features Actuation System Instrumentation Trip Setpoints", Functional Unit 6, Steam Generator Water Level--Low: Revise to reflect the following values:

a) Trip Setpoint from "15%" to "10%", and
b) Allowable Value from "13%" to "8.9%".

Justification: Westinghouse identified that the potential exists that insufficient margin may have been included in the PMA term for Steam Generator Water Level instrumentation uncertainty calculations. This would impact the protection

functions which use this parameter, i.e., Steam Generator Water Level Low and Low-Low trip setpoints. Previously a value of ±2.0% span was used for this term in setpoint uncertainty calculations for all models of steam generator design. This value was based on various process parameters which are determined by specific plant operating conditions.

With the inclusion of the additional PMA terms and the treatment of the PMA terms as a bias, the existing trip setpoints for Steam Generator Water Level Low and Low-Low provide margin to protect the existing safety analysis limits. The Turkey Point Steam Generator Water Level Low and Low-Low protection system setpoints, have been recalculated to account for additional PMA uncertainties. The reduction in Steam Generator Water Level Low-Low setpoint has been analyzed in Chapter 14 UFSAR analyses and FPL has confirmed that sufficient margin exists to maintain safe plant operation.

11. TS Table 3.3-3, "Engineered Safety Features Actuation System Instrumentation Trip Setpoints," Functional Unit 6.b., Steam Generator Water Level--Low-Low, Allowable Value: Change the signs from "≤" to "≥".

Justification: By letter dated April 23, 1991, the NRC issued license amendments 140/135 for Turkey Point Units 3 and 4, respectively, to implement the replacement of the resistance thermal detector (RTD) bypass manifold system with fast-response thermowell-mounted RTDs. The Technical Specification pages that were transmitted with the NRC letter of April 23, 1991, included the correct sign of "≥" for the Steam Generator Water Level -- Low-Low trip setpoint. By letter dated August 26, 1991, the NRC issued license amendments 146/141 for Turkey Point Units 3 and 4, respectively, to implement the Westinghouse setpoint five-column methodology. The Technical Specification pages that were transmitted with the NRC letter of August 26, 1991, incorrectly transposed the sign for the Steam Generator Water Level -- Low-Low trip setpoint. This correction will ensure consistency between Technical Specification Tables 2.2-1 (Functional Unit 11) and 3.3-3 (Functional Unit 6.b.)

ANALYSIS

OVERTEMPERATURE ΔT AND OVERPOWER ΔT

Revised core thermal limits reflected in TS Figure 2.1-1 were generated employing the RTDP methodology. Overtemperature ΔT and Overpower ΔT setpoints and associated uncertainties were calculated based on the new core thermal limits. A review of the Turkey Point UFSAR was performed to determine those events sensitive to changes in the Overtemperature and Overpower ΔT setpoints. Each of the events have been analyzed to determine if the various acceptance criteria

were met. In all cases, the acceptance criteria were met, and therefore the margin of safety is maintained.

STEAM GENERATOR PROCESS MEASUREMENT ACCURACY

Westinghouse identified that the potential exists that insufficient margin may have been included in the Process Measurement Accuracy term for Steam Generator Water Level instrumentation uncertainty calculations. This would impact the protection functions which use this parameter, i.e., Steam Generator Water Level-Low and Low-Low setpoints. The Steam Generator Water Level--High-High setpoint includes the revised PMA term, as approved in license amendments 163/157 for Turkey Point Units 3 and 4.

Previously a random value of $\pm$2.0% span was used for this term in setpoint uncertainty calculations for all models of steam generator design. This value was based on various process parameters which are determined by specific plant operating conditions.

More recently, an improved understanding of ΔP level measurement system errors based on scientific work documented in an Instrument Society of America paper (G. E. Lang and J. P. Cunningham, "Delta-P Level Measurement Systems", "Instrumentation, Controls, and Automation in the Power Industry", Vol.34, Proceedings of the Thirty-Fourth Power Instrumentation Symposium, June 1991), has led to a reinvestigation of the Steam Generator Level PMA terms. The conclusions are that two other error components should be accounted for explicitly (i.e., reference leg temperature changes from calibration temperature, and downcomer subcooling) and that fluid velocity effects should be considered. These error components are not considered to be random in nature, and therefore, are treated as biases.

With the inclusion of the additional PMA terms and their treatment as biases, the existing trip setpoints for Steam Generator Water Level Low and Low-Low provide ample margin to protect the existing safety analysis limits.

The applicable terms are defined as follows:

Trip Setpoint: Nominal value at which the trip is set.

Allowable Value: Allowable Value is a value chosen to accommodate the instrument drift assumed to occur between operational tests and the accuracy to which setpoints can be measured and calibrated. Operation with setpoints less conservative than the Trip Setpoint but within the Allowable Value is acceptable since an allowance has been made in the safety analysis to accommodate this error.

For the Steam Generator Water Level Low and Low-Low trip setpoints the previous PMA value included a random independent term in the overall channel statistical allowance. Explicit values were calculated for

process pressure variations, reference leg temperature variations, with respect to the calibration conditions and included arithmetically as a positive bias or a negative bias as appropriate. Additionally, the safety analysis was performed at 5% to support the Technical Specification nominal trip setpoint of 10% for Steam Generator Water Level Low-Low trip.

The basis for determination of acceptability of the existing trip setpoints and allowable values is defined in WCAP-12745, "Westinghouse Setpoint Methodology for Protection Systems Turkey Point Units 3 & 4."

DNB PARAMETER SURVEILLANCE REQUIREMENTS

By improving procedures and replacement of instrumentation, FPL can gain additional operational margin to the limits associated with the measurement and indication of RCS Flow. The RTDP calculated precision flow calorimetric uncertainty remains at 3.5% flow. The 3.5% flow uncertainty was maintained to provide the plant flexibility by extending the time requirement from calibration to performance of the precision flow calorimetric. Alternate methods of taking data were evaluated to reduce the probability of causing spurious trips when performing calorimetrics.

The limits on the DNB-flow parameter assure that the parameter is maintained within the normal steady-state envelope of operation assumed in the transient and accident analyses. The limit is consistent with the initial UFSAR assumptions and has been demonstrated adequate to maintain the required minimum DNBR above the applicable design limits throughout each analyzed transient. In all cases, the acceptance criteria were met, and therefore the margin of safety is maintained.

Technical Specification (TS) 3/4.2.5 requires that the flow parameter of 277,900 gpm be verified within the limits once per 12 hours. The value listed of 277,900 gpm is the precision flow calorimetric limit and wasn't intended to be utilized as the limit for the daily shift surveillance. The SURVEILLANCE REQUIREMENT and BASES of the TS are revised to provide clarification of the surveillance. The SURVEILLANCE REQUIREMENT is similar to that previously submitted and approved for the Shearon Harris and Vogtle plants' TS.

With the incorporation of the RTDP analyses, the RCS low flow trip setpoint of TS Table 2.2-1, Item 10, was evaluated to account for changes in performing the precision flow calorimetric used for normalization of the trip setpoint. The TS trip setpoint remains the same, however, the Westinghouse setpoint methodology dictates revision to the Allowable Value.

SUMMARY

Revised core thermal limits reflected in TS Figure 2.1-1 were generated employing the Revised Thermal Design Procedure (RTDP) methodology. Overtemperature and Overpower ΔT reactor trip setpoints

and associated uncertainties were calculated based on the new core thermal limits. A review of the Turkey Point Updated Final Safety Analysis Report (UFSAR) was performed to determine those events sensitive to changes in the Overtemperature and Overpower ΔT reactor trip setpoints. Each of the events [i.e., Rod Withdrawal at Power, Boron Dilution, and Loss of Load] have been analyzed to determine if the various acceptance criteria were met. In all cases, the acceptance criteria were met, and therefore the margin of safety is maintained.

With the inclusion of the additional Process Measurement Accuracy terms and their treatment as biases, the existing trip setpoints for Steam Generator Water Level Low and Low-Low provide ample margin to protect the existing Safety Analysis Limits. The reduction in Steam Generator Water Level Low-Low setpoint has been analyzed in Chapter 14 UFSAR analyses and FPL has confirmed that sufficient margin exists to maintain safe plant operation.

With incorporation of the RTDP analyses, the RCS low flow trip setpoint of TS Table 2.2-1, Item 10, was evaluated to account for changes in performing the precision flow calorimetric used for normalization of the trip setpoint. The Technical Specification trip setpoint remains the same, however, the Westinghouse setpoint methodology dictates revision to the Allowable Value.

ATTACHMENT 3

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

1.0 CORE THERMAL LIMITS, OVERTEMPERATURE ΔT and OVERPOWER ΔT REACTOR TRIP SETPOINT

Description of Proposed License Amendments

Revised core thermal limits reflected in TS Figure 2.1-1 were generated employing the Revised Thermal Design Procedure (RTDP) methodology. Overtemperature and Overpower ΔT reactor trip setpoints and associated uncertainties were calculated based on the new core thermal limits. A review of the Turkey Point Updated Final Safety Analysis Report (UFSAR) was performed to determine those events sensitive to changes in the Overtemperature and Overpower ΔT reactor trip setpoints. Each of the events [i.e., Rod Withdrawal at Power, Boron Dilution, and Loss of Load] have been analyzed to determine if the various acceptance criteria were met. In all cases, the acceptance criteria were met, and therefore the margin of safety is maintained.

Introduction

The Nuclear Regulatory Commission has provided Standards for determining whether a significant hazards consideration exists (10 CFR 50.92 (c)). A proposed amendment to an operating license for a facility involves no significant hazards consideration, if operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the 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. Each standard is discussed below for the proposed amendments.

Discussion

(1) Operation of the facility in accordance with the proposed amendments would not involve a significant increase in the probability or consequences of an accident previously evaluated.

The revised Overtemperature and Overpower ΔT reactor trip functions do not involve an increase in the probability or consequences of an accident previously evaluated because operation with these revised values will not cause any design or analysis acceptance criteria to be exceeded. The structural and functional integrity of all plant systems is unaffected. The Overtemperature and Overpower ΔT reactor trip functions are part of the accident mitigation response and are not initiators for any transient. Therefore, the probability of occurrence previously evaluated are not affected.

The changes to the Overtemperature and Overpower ΔT reactor trip functions do not affect the integrity of the fission product barriers utilized for mitigation of radiological dose consequences as a result of an accident. In addition, the off-

site mass releases used as input to the dose calculations are unchanged from those previously assumed. Therefore, the off-site dose predictions remain within the acceptance criteria of 10 CFR Part 100 limits for each of the transients affected. Since it has been concluded that the transient analyses results are unaffected by the parameter modifications, it is concluded that the probability or consequences of an accident previously evaluated are not increased.

(2) **The proposed license amendments do not create the possibility of a new or different kind of accident from any accident previously evaluated.**

The revised Overtemperature and Overpower ΔT reactor trip functions do not create the possibility of a new or different kind of accident from any accident previously evaluated because the setpoint adjustments do not affect accident initiation sequences. No new operating configuration is being imposed by the setpoint adjustments that would create a new failure scenario. In addition, no new failure modes or limiting single failures have been identified. Therefore, the types of accidents defined in the UFSAR continue to represent the credible spectrum of events to be analyzed which determine safe plant operation. Therefore, it is concluded that no new or different kind of accidents from those previously evaluated have been created as a result of these revisions.

(3) **The proposed license amendments do not involve a significant reduction in a margin of safety.**

The changes to the Overtemperature and Overpower ΔT reactor trip functions do not involve a reduction in the margin of safety because the margin of safety associated with the Overtemperature and Overpower ΔT reactor trip functions, as verified by the results of the accident analyses, are within acceptable limits. All transients impacted by implementation of the RTDP methodology have been analyzed and have met the applicable accident analyses acceptance criteria. The margin of safety required for each affected safety analysis is maintained. This conclusion is not changed by the Overtemperature and Overpower ΔT setpoint modifications. The adequacy of the revised Technical Specifications values to maintain the plant in a safe operating condition has been confirmed. Therefore, the changes to the Overtemperature and Overpower ΔT reactor trip functions do not involve a significant reduction in the margin of safety.

CONCLUSIONS

It has been determined that the proposed changes to the Technical Specifications to revise the Overtemperature and Overpower ΔT reactor trip setpoint values identified in TS Table 2.2-1 and the Reactor Core Thermal Safety limits in TS Figure 2.1-1 are acceptable. These revisions do not involve an increase in the probability or consequences of an accident previously evaluated; they neither create the possibility of a new or different kind of accident from any accident previously evaluated, nor involve a significant reduction in a margin of safety. Therefore, it is concluded that the proposed changes do not involve a significant hazard in accordance with 10 CFR 50.92.

2.0 STEAM GENERATOR PROCESS MEASUREMENT ACCURACY

Description of Proposed License Amendments

Westinghouse identified that the potential exists that insufficient margin had been included in the Process Measurement Accuracy (PMA) term for Steam Generator Water Level instrumentation uncertainty calculations. This would impact the protection functions which use this parameter, i.e. Steam Generator Water Level-Low and Low-Low setpoints.

Previously a random value of $\pm$2.0% span was used for the PMA term in setpoint uncertainty calculations for all models of steam generator design. This value was based on various process parameters which are determined by specific plant operating conditions.

More recently, an improved understanding of ΔP level measurement system errors based on scientific work documented in an Instrument Society of America paper (G. E. Lang and J. P. Cunningham, "Delta-P Level Measurement Systems", "Instrumentation, Controls, and Automation in the Power Industry", Vol.34, Proceedings of the Thirty-Fourth Power Instrumentation Symposium, June 1991), has led to a reinvestigation of the Steam Generator Level Process Measurement Accuracy terms. The conclusions are that two other error components should be accounted for explicitly (i.e., reference leg temperature changes from calibration temperature, and downcomer subcooling) and that fluid velocity effects should be considered. These error components are not considered to be random in nature, and therefore are treated as biases.

With the inclusion of the additional Process Measurement Accuracy terms and their treatment as biases, the existing trip setpoints for Steam Generator Water Level Low and Low-Low provide ample margin to protect the existing Safety Analysis Limits. The reduction in Steam Generator Water Level Low-Low setpoint has been analyzed in Chapter 14 UFSAR analyses and FPL has confirmed that sufficient margin exists to maintain safe plant operation.

Introduction

The Nuclear Regulatory Commission has provided Standards for determining whether a significant hazards consideration exists (10 CFR 50.92 (c)). A proposed amendment to an operating license for a facility involves no significant hazards consideration, if operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the 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. Each standard is discussed below for the proposed amendments.

Discussion

(1) Operation of the facility in accordance with the proposed amendments would not involve a significant increase in the probability or consequences of an accident previously evaluated.

The revised reactor trip setpoints on Steam Generator water level do not involve a significant increase in the probability or consequences of an accident previously evaluated. Operation with these revised values will not cause any design or analysis acceptance criteria to be exceeded. The structural and functional integrity of any plant system is unaffected. The Steam Generator Water Level trip functions are part of the accident mitigation response and are not themselves initiators for any transient. Therefore, the probability of occurrence previously evaluated is not affected.

The changes to the reactor trip setpoints do not affect the integrity of the fission product barriers utilized for mitigation of radiological dose consequences as a result of an accident. The Steam Generator Water Level Low-Low trip setpoint assumed in the safety analyses has been revised and acceptable results were obtained. The Steam Generator Water Level-Low setpoint is not credited in the safety analysis. Consequently, the required margin of safety for each affected safety analysis has been maintained. In addition, the offsite mass releases used as input to the dose calculations are unchanged from those previously assumed. Therefore, the offsite dose predictions remain within the acceptance criteria of 10 CFR Part 100 limits for each of the transient analyses affected. Since it has been determined that the transient analysis results are unaffected by these parameter modifications, FPL concludes that the consequences of an accident previously evaluated are not increased.

2. The proposed license amendments do not create the possibility of a new or different kind of accident from any accident previously evaluated.

The setpoint values do not affect the assumed accident initiation sequences. In addition, no new failure modes or limiting single failures have been identified for any plant equipment. Therefore, the types of accidents defined in the UFSAR continue to represent the credible spectrum of events to be analyzed which determine safe plant operation. Therefore, the possibility of a new or different kind of accident from any accident evaluated is not increased.

3. The proposed license amendments do not involve a significant reduction in the margin to safety.

The current Technical Specification trip setpoints and allowable values were changed to maintain the current safety analysis limits. The Steam Generator Water Level Low-Low trip setpoint assumed in the safety analyses has been revised and acceptable results were obtained. The Steam Generator Water Level-Low setpoint is not credited in the safety analysis. Consequently, the required margin of safety for each affected safety analysis has been maintained. Thereby, the adequacy of the revised Technical Specification values to maintain the plant in a safe operating condition is also confirmed.

Conclusion

Based upon the preceding analysis, it has been determined that the proposed change to the Technical Specifications to modify the Steam Generator Water Level-Low and Low-Low Trip Setpoint and Allowable Value does not involve a significant increase in the probability or consequences of an accident previously evaluated, create the possibility of a new or different kind of accident from an accident previously evaluated or involve a significant reduction in a margin of safety. Therefore, it is concluded that the proposed changes do not involve a significant hazards consideration.

The revised reactor trip functions on Steam Generator Water Level do not involve a significant increase in the probability or consequences of an accident previously evaluated. Operation with these revised values will not cause any design or analysis acceptance criteria to be exceeded. The structural and functional integrity of any plant system is unaffected. The Steam Generator Water Level trip functions are part of the accident mitigation response and are not themselves initiators for any transient. Therefore, the probability of occurrence previously evaluated is not affected.

3.0 DNB PARAMETER SURVEILLANCE REQUIREMENTS

Description of Proposed License Amendments

By improving procedures and replacement of instrumentation, FPL can gain additional operational margin to the limits associated with the measurement and indication of RCS Flow. The RTDP calculated precision flow calorimetric uncertainty remains at 3.5% flow. The 3.5% flow uncertainty was maintained to provide the plant flexibility by extending the time requirement from calibration to performance of the precision flow calorimetric. Alternate methods of taking data were evaluated to reduce the probability of causing spurious trips when performing calorimetrics.

The limits on the DNB-flow parameter assure that the parameter is maintained within the normal steady-state envelope of operation assumed in the transient and accident analyses. The limit is consistent with the initial UFSAR assumptions and has been demonstrated adequate to maintain the required minimum DNBR above the applicable design limits throughout each analyzed transient. In all cases, the acceptance criteria were met, and therefore the margin of safety is maintained.

Technical Specification 3/4.2.5 requires that the flow parameter of 277,900 gpm be verified within the limits once per 12 hours. The value listed of 277,900 gpm is the precision flow calorimetric limit and was not intended to be utilized as the limit for the daily shift surveillance. The SURVEILLANCE REQUIREMENT and BASES of the Technical Specifications are revised to provide clarification of the surveillance. The SURVEILLANCE REQUIREMENT is similar to that previously submitted and approved for the Shearon Harris and Vogtle plants' Technical Specifications.

With incorporation of the RTDP analyses, the RCS low flow trip setpoint of TS Table 2.2-1, Item 10, was evaluated to account for changes in performing the precision flow calorimetric used for normalization of the trip setpoint. The Technical Specification trip setpoint remains the same, however, the Westinghouse setpoint methodology dictates revision to the Allowable Value.

Introduction

The Nuclear Regulatory Commission has provided Standards for determining whether a significant hazards consideration exists (10 CFR 50.92 (c)). A proposed amendment to an operating license for a facility involves no significant hazards consideration, if operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the 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. Each standard is discussed below for the proposed amendments.

Discussion

(1) Operation of the facility in accordance with the proposed amendments would not involve a significant increase in the probability or consequences of an accident previously evaluated.

With the retention of the previous Safety Analyses Limits for Departure from Nucleate Boiling (DNB) (T.S. 3/4.2.5) and the existing Reactor Coolant System (RCS) low flow trip Nominal Trip Setpoint (NTS), there is no increase in the probability or consequences of an accident previously evaluated because there is no change to any design or analysis acceptance criteria. The structural and functional integrity of any plant system is unaffected. The proposed license amendments revise the surveillance requirements for DNB parameters and incorporate the RTDP uncertainty analysis into the Westinghouse methodology for the RCS Loss of Flow determination of the Allowable Value.

The changes to the reactor trip functions do not affect the integrity of the fission product barriers utilized for mitigation of radiological dose consequences as a result of an accident. The margin to safety for the RCS Loss of Flow trip remains protected as the trip setpoints assumed in the safety analyses are not revised. In addition, the offsite mass releases used as input to the dose calculations are unchanged from those previously assumed. Therefore, the offsite dose predictions remain within the acceptance criteria of 10 CFR Part 100 limits for each of the transients affected. Since it has been determined that the transient results are unaffected by these parameter modifications, it is concluded that the consequences of an accident previously evaluated are not increased.

(2) Operation of the facility in accordance with the proposed amendment would not create the possibility of a new or different kind of accident from any accident previously evaluated.

The revised Allowable Value does not create the possibility of a new or different kind of accident from any accident previously evaluated. Revision of the surveillance requirements merely provides clarification to more accurately reflect the surveillance activity.

The Allowable Value does not affect the assumed accident initiation sequences. In addition, no new failure modes or single failures have been identified for any plant equipment. Therefore, the types of accidents defined in the UFSAR continue to represent the credible spectrum of events to be analyzed which determine safe plant operation. Therefore, it is concluded that no new or different kind of accidents from those previously evaluated have been created as a result of these revisions.

3. The proposed license amendments do not involve a significant reduction in the margin to safety.

The RCS Loss of Flow setpoint assumed in the safety analysis remains unchanged. Since the safety analysis limit setpoint value is unchanged and no safety analysis is affected, the required margin of safety for each affected safety analysis is maintained. Thereby, the adequacy of the revised Technical Specification values to maintain the plant in a safe operating condition is also confirmed. Therefore, the change to the RCS Loss of Flow Allowable Value does not involve a significant reduction in the margin of safety.

Conclusion

Based upon the preceding analysis, it has been determined that the proposed changes to the Technical Specifications to modify the RCS Loss of Flow Allowable Value along with the DNB surveillance requirements do not involve a significant increase in the probability or consequences of an accident previously evaluated; create the possibility of a new or different kind of accident from an accident previously evaluated; or involve a significant reduction in a margin of safety. Therefore, it is concluded that the proposed changes meet the requirements of 10 CFR 50.92(c) and do not involve a significant hazards consideration.

ATTACHMENT 4 TO L-95-250

REVISED PROPOSED TECHNICAL SPECIFICATIONS

Marked up Technical Specification Pages:

2-2 (Not affected by Amendments 170/176)
2-4 (Revised)
2-5 (Revised)
2-7 (Not affected by Amendments 170/176)
2-8 (Not affected by Amendments 170/176)
2-9 (Not affected by Amendments 170/176)
2-10 (Not affected by Amendments 170/176)
3/4 2-16 (Not affected by Amendments 170/176)
3/4 3-24 (Deleted from PLA request, per Amendments 170/176)
3/4 3-26 (Deleted from PLA request, per Amendments 170/176)
3/4 3-27 (Revised)
3/4 3-30 (Deleted from PLA request, per Amendments 170/176)
B 3/4 2-8 (Not affected by Amendments 170/176)