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SUBJECT: Application for amend to License DPR-67, incorporating revised pressure/temp limits & results of recent low temp overpressure protection analysis into Tech Specs. Safety evaluation of proposed amend & rept by C-E encl. Fee paid.
SEE PROPOSED CHANGES TO TECH SPECS

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FPL

MARCH 17 1987

L-87-122

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

Gentlemen:

Re: St. Lucie Unit 1
Docket No. 50-335
Proposed License Amendment
P/T Limits and LTOP Analysis

In accordance with 10 CFR 50.90, Florida Power & Light Company (FPL) submits herewith a request to amend Facility Operating License DPR-67.

The purpose of the amendment is to incorporate revised Pressure/Temperature (P/T) limits and the results of a recent Low Temperature Overpressure Protection (LTOP) analysis into the Technical Specifications for St. Lucie Unit 1. The removal of the St. Lucie Unit 1 thermal shield resulted in a reduction in the period of applicability of the current Technical Specification Reactor Coolant System (RCS) pressure/temperature limitations from 10 Effective Full Power Years (EFPY) to 7.4 EFPY. As a result, at 7.4 EFPY the existing St. Lucie Unit 1 Overpressure Mitigating System (OMS), which is designed based on the current P/T limitations, will be inadequate for low temperature overpressure protection for the reactor coolant pressure boundary. Your approval of the proposed amendment is requested prior to the plant reaching 7.4 EFPY (about May 12, 1987), since the existing P/T curves expire at that time. We are prepared to meet with your staff as necessary to expedite the review process.

Attachment 1 is a Safety Evaluation of the proposed amendment. Attachment 2 is a determination of the "No Significant Hazards Consideration." Attachment 3 is a detailed report of the methodology used to calculate the new P/T curves and proposed OMS system alignment configurations. Revised Technical Specification pages are provided in Attachment 4.

The proposed amendment has been reviewed by the St. Lucie Facility Review Group and the Florida Power & Light Company Nuclear Review Board.

In accordance with 10 CFR 50.91(b)(1), a copy of the proposed amendment is being forwarded to the state designee for the State of Florida.

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an FPL Group company

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In accordance with 10 CFR 170.21, FPL Check No. 3982 is attached as remittance of the license amendment application fee.

Very truly yours,

C. O. Woody
Group Vice President
Nuclear Energy

COW/EJW/gp

Attachments (5)

cc: Dr. J. Nelson Grace, USNRC, Region II
Senior Resident Inspector, USNRC, St. Lucie Plant
Mr. Lyle Jerrett, Florida Dept. of Health and Rehabilitative Services

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

C. O. Woody being first duly sworn, deposes and says:

That he is a Group 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.

C. O. Woody

Subscribed and sworn to before me this
17th day of March, 1987.

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

NOTARY PUBLIC STATE OF FLORIDA
MY COMMISSION EXP SEPT 18,1989
BONDED THRU GENERAL INS. UND.

My Commission expires:

ATTACHMENT I

SAFETY EVALUATION

Description of Change

The removal of the St. Lucie Unit I thermal shield resulted in a reduction in the period of applicability of the current Technical Specification reactor coolant system (RCS) pressure/temperature (P/T) limitations from 10 years of full power operation to 7.4 effective full power years (EFPY). As a result, at 7.4 EFPY, the existing St. Lucie Unit I Overpressure Mitigating System (OMS), which is designed based on these P/T limitations, will be inadequate for low temperature overpressure protection for the reactor coolant pressure boundary (RCPB).

An analysis of P/T limits and low temperature overpressure protection (LTOP) has been performed to ensure that RCPB integrity will be maintained in the low temperature modes of operation during the operating period from 7.4 EFPY to 10 EFPY. For that purpose, new P/T limits have been developed and a number of administrative and hardware modifications to the existing OMS have been identified.

The P/T limits proposed by this Technical Specification change ensure that all components in the reactor coolant system (RCS) will be able to withstand the effects of cyclic loads due to system temperature and pressure changes without their functions or performance being impaired. These cyclic loads are introduced by normal load transients, reactor trips, and startup and shutdown operations. The low temperature overpressure protection provided by the overpressure mitigating system ensures RCS overpressurization below certain temperatures would be prevented, thus maintaining the reactor coolant pressure boundary integrity.

The proposed changes are as follows:

a. Limiting Conditon for Operation (LCO) 3.4.9.1 currently provides the pressure and temperature limits in terms of Figures 3.4-2a, 3.4-2b and 3.4-2c for the RCS (except the pressurizer) during heatup, cooldown, criticality, and inservice leak and hydrostatic testing for 5, 10, and 40 years of full power operation respectively. The proposed amendment replaces these three figures with Figures 3.4-2a and 3.4-2b, one for heatup and criticality and one for cooldown and inservice leak and hydrostatic testing. It also adds Figure 3.4-3, which graphically depicts the maximum allowable cooldown rates. Furthermore, the proposed change revises the maximum allowable heatup and cooldown rates from 100°F in any one hour period to 40°F/hr at cold leg temperatures less than or equal to 102°F and 50°F/hr at cold leg temperatures greater than 102°F during heatup, and according to Figure 3.4-3 during cooldown.

b. LCO 3.4.13 requires that two power operated relief valves (PORVs) be OPERABLE, with their setpoints selected to the low temperature mode of operation. The proposed amendment establishes new PORV set points at less than or equal to 350 psia when the reactor coolant cold leg temperature is less than or equal to 180°F during heatup and isothermal conditons, and less than or equal to 200°F during cooldown; and at less than or equal to 530 psia when the reactor coolant cold leg temperature is greater than 180°F during heatup and isothermal conditions, and greater than 200°F during cooldown.

c. Definition 1.16 defines, in part, the cold leg temperature of less than or equal to 275°F as one of the operating conditions considered to be the low temperature RCS ovepressure protection range. The proposed change raises the cold leg temperature from 275°F to 334°F as the upper limit for the LTOP mode of operation.

d. LCO 3.4.14 states the condition under which a reactor coolant pump can be started in MODEs 3, 4 and 5. This LCO currently does not allow starting of a reactor coolant pump(s) unless the pressurizer liquid level is less than 40% if the steam generator temperature exceeds the primary temperature by more than 45°F. The proposed amendment revises this temperature differential to 30°F, deletes the allowance for 40% pressurizer level, and specifies that this LCO refers to the first idle reactor coolant pump to be started.

e. Footnote (##) appended to the Applicability in LCO 3.4.1.4.1 for Mode 5 with reactor coolant loops filled currently states that a reactor coolant pump should not be started with two idle loops in which one or more of the reactor coolant systems cold leg temperatures is less than or equal to 165°F unless 1) the pressurizer water volume is less than 40% indicated level, or 2) the secondary water temperature of each system generator is less than 45°F above each of the reactor coolant system cold leg temperatures. The proposed amendment revises this footnote to state that a reactor coolant pump shall not be started with two idle loops unless the secondary water temperature of each steam generator is less than 30°F above each of the reactor coolant system cold leg temperatures.

f. Footnote (*) appended to the high pressure safety injection (HPSI) pump in LCO's 3.1.2.1 and 3.1.2.3 currently states when the RCS temperature is less than 165°F, the flow path from the refueling water tank (RWT) to the RCS via the HPSI pumps shall be established only if the reactor coolant system pressure boundary integrity does not exist, or if no charging pumps are operable. The proposed amendment revises this footnote to state that the flow path from the RWT to the RCS via a single HPSI pump shall only be established if the RCS pressure boundary does not exist, or if no charging pumps are operable, in which case all charging pumps shall be disabled, and heatup and cooldown rates shall be limited in accordance with Figure 3.1-1b.

g. LCO's and ACTION statements of the Technical Specification 3.5.3 provide the limit of the RCS temperature for the required number of HPSI pumps to be OPERABLE and the operational modes in which one ECCS subsystem is required to be OPERABLE. The proposed change revises the RCS temperature in LCO 3.5.3b and ACTION b from 215°F to 253°F, the RCS temperature in LCO 3.5.3c from 165°F to 220°F. The applicability of LCO 3.5.3 has been revised from MODES 3, 4 and 5 to MODEs 3 and 4 above 235°F. The value of 235°F was chosen to allow a 15°F margin above the analzyed value of 220°F for demonstration of the OPERABILITY of the HPSI pump.

h. Finally, the proposed amendment revises the appropriate Bases. In particular, Figure B3/4.4-1 is being deleted and Table B3/4.4-1 is being revised accordingly.

i. A detailed report of the methodology used to calculate the new pressure/temperature curves and proposed OMS system alignment configurations is given in Attachment 3.

ATTACHMENT 2

NO SIGNIFICANT HAZARDS CONSIDERATION

The standards used to arrive at a determination that a request for amendment involves no significant hazards consideration are included in the Commission's regulation, 10 CFR 50.92, which states that no significant hazards considerations are involved if the 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 as follows:

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

The pressure/temperature (P/T) limit curves in the Technical Specifications are conservatively generated in accordance with the fracture toughness requirements of 10 CFR 50 Appendix G as supplemented by the ASME Code Section III, Appendix G. The RT_{NDT} values for the revised curves are based on Regulatory Guide 1.99, Revision 02 (Draft) shift correlations and Combustion Engineering's flux attenuation factors. The analysis of reactor vessel material irradiation surveillance specimens are used to verify the validity of the fluence predictions and the P/T limit curves. Use of the revised curves in conjunction with the surveillance specimen program ensures that the reactor coolant pressure boundary will behave in a non-brittle manner and that the possibility of rapidly propagating fracture is minimized.

In conjunction with revising the P/T limit curves, a low temperature overpressure protection analysis has been performed to establish the configuration and PORV setpoints of the St. Lucie Unit 1 low temperature overpressure protection system.

To ensure compliance with the P/T limit curves, overpressure protection is provided to keep the RCS pressure below the P/T limits for any given temperature after the initiation of assumed pressure transients (energy-addition and mass-addition transients) while operating below the temperature at which the pressurizer safety valves provide overpressure protection during heatup and cooldown.

The revised P/T curves and LTOP system do not represent a significant change in the configuration or operation of the plant. The results of the LTOP analysis show that the limiting pressures for a given temperature are not exceeded for the assumed transients and that reactor vessel integrity is maintained. Thus, the proposed amendment does not involve an increase in the probability or consequences of accidents previously evaluated.

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(2) Use of the modified specification would not create the possibility of a new or different kind of accident from any accident previously evaluated.

The evaluation performed has resulted in revised P/T limits based on the fracture toughness requirements of 10 CFR 50 Appendix G, and in a revised low temperature overpressure protection system based on standard energy and mass addition transients. Since there is no significant change in the configuration or operation of, the facility as a result of the proposed amendment, the use of revised P/T limits and/or PORV setpoints will not create the possibility of a new or different kind of accident from any accident previously evaluated.

(3) Use of the modified specification would not involve a significant reduction in a margin of safety.

The proposed amendment will not involve a significant reduction in a margin of safety, because the fracture toughness requirements of 10 CFR 50 Appendix G are satisified and conservative operating restrictions are applied for the purpose of low temperature overpressure protection.

In conclusion, based on the analysis performed, we have determined that the amendment request does not (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the probability of a new and 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 consideration.