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SUBJECT: Application for amends to licenses DPR-67 & NPF-16. Amends would revise action statements & certain surveillances of TS 3/4.5.1 re safety injection tanks. O

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FPL

June 21, 1995

L-95-134
10 CFR 50.90

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

RE: St. Lucie Unit 1 and Unit 2
Docket Nos. 50-335 and 50-389
Proposed License Amendments
Safety Injection Tank AOT Extension

Pursuant to 10 CFR 50.90, Florida Power & Light Company (FPL) requests to amend Facility Operating Licenses DPR-67 and NPF-16 for St. Lucie Unit 1 and Unit 2, respectively, by incorporating the attached Technical Specifications (TS) revisions. The proposed amendments will revise the action statements and certain surveillances of TS 3/4.5.1, Safety Injection Tanks (SIT). This proposal is based on the results of a cooperative study performed by participating Combustion Engineering Owners Group members which investigated the impact of a risk-based allowed outage time (AOT) extension, and also included recommendations for line-item TS improvements from NUREG-1366 and Generic Letter 93-05.

It is requested that the proposed amendments, if approved, be issued by February 29, 1996.

Attachment 1 is an evaluation of the proposed changes. Attachment 2 is the "Determination of No Significant Hazards Consideration." Attachments 3 and 4 contain copies of the appropriate technical specifications pages marked up to show the proposed changes. Enclosed with this submittal is a copy of CE-NPSD-994, "Joint Applications Report for Safety Injection Tank AOT/STI Extension," May, 1995.

The proposed amendments have been reviewed by the St. Lucie Facility Review Group and the FPL Company Nuclear Review Board. In accordance with 10 CFR 50.91 (b) (1), copies of the proposed amendments are being forwarded to the State Designee for the State of Florida.

Please contact us if there are any questions about this submittal.

Very truly yours,

D. A. Sager
Vice President
St. Lucie Plant

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DAS/RLD

Attachments

Enclosure

cc: Stewart D. Ebnetter, Regional Administrator, Region II, USNRC.
Senior Resident Inspector, USNRC, St. Lucie Plant.
Mr. W.A. Passetti, Florida Department of Health and
Rehabilitative Services.



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ATTACHMENT 1

EVALUATION OF PROPOSED TS CHANGES

EVALUATION OF PROPOSED TS CHANGES

Introduction

Florida Power and Light Company (FPL) requests that Appendix A of Facility Operating License DPR-67 for St. Lucie Unit 1 (PSL1) and NPF-16 for St. Lucie Unit 2 (PSL2) be revised to incorporate improvements to specifications for the Emergency Core Cooling Systems (ECCS) Safety Injection Tanks (SIT). The changes include a two-tiered extension of the action completion/allowed outage time (AOT) for the case where (a) one SIT is inoperable due to the boron concentration not within limits, or due to the inability to verify SIT water level or pressure, or (b) one SIT is inoperable for any other reason. In addition, certain line-item TS improvements are proposed that are consistent with guidance provided in GL 93-05, "Line-Item Technical Specifications Improvements to Reduce Surveillance Requirements for Testing During Power Operation."

Description of PSL1 and PSL2 Proposed TS Changes

Unless otherwise indicated, the following proposed changes apply to both PSL1 and PSL2. Marked-up TS pages are contained in Attachment 3 (PSL1) and Attachment 4 (PSL2).

1. LCO 3.5.1 ACTIONS:

- a. When a single SIT is declared inoperable due to boron concentration not within the prescribed limits, or due to the inability to verify the required SIT water volume or nitrogen cover-pressure, the AOT to restore the SIT to OPERABLE status will be extended from one hour to 72 hours.
- b. When a single SIT is discovered inoperable for reasons other than stated in 1.a above, the AOT to restore the SIT to OPERABLE status will be extended to 24 hours.
- c. If an inoperable SIT is not restored to OPERABLE status within the AOT, transition to HOT STANDBY within the next 6 hours and to HOT SHUTDOWN within the following 6 hours will be required.

2. SR 4.5.1.a.1 and SR 4.5.1.b, and (for PSL1 only) SR 4.5.1.d: Minor administrative changes will be made to clarify the intent of the required surveillances.
3. SR 4.5.1.1.a.1 (PSL2 only) will be revised to delete the reference to verify operability "by the absence of alarms," and to clarify the intent of the required surveillance.
4. SR 4.5.1.2 (PSL2 only) will be deleted.
5. Bases page B 3/4 5-1 will be revised to include summary statements regarding the bases for the AOTs.

Background

The function of the four Safety Injection Tanks is to re-flood the reactor core with borated water during a Loss of Coolant Accident (LOCA). The rapid response system is passive in nature and serves to reliably minimize the potential for core damage until the Safety Injection pumps can provide adequate water for reactor cooling. Each tank is connected to a cold leg of the Reactor Coolant System (RCS) via a safety injection nozzle located near the reactor vessel. During normal operation, the SIT liquid inventories are pressurized to 200-250 psig (500-650 psig for PSL2) with nitrogen cover gas. The SITs are isolated from the RCS by two series check valves, and will automatically discharge into the RCS when system pressure decreases below SIT pressure.

Each SIT has a motor operated isolation valve with two methods of position indication available in the control room, e.g., open/closed display lamps and a 0-100% analog position indicator. The valves are interlocked with pressurizer pressure to automatically receive an open signal when pressure is greater than 350 psia (500 psia for PSL2). In addition, each valve receives an open command when a Safety Injection Actuation Signal (SIAS) is generated. During the plant operational modes in which the SITs must be operable, the isolation valves are open, their control switches are locked in the open position, and electrical power to the valve operator is disconnected at the appropriate motor control center under administrative controls. These provisions assure that a single failure will not cause inadvertent SIT isolation. Annunciators are available in the control room to alert operators to a condition where any of these valves is not in the full-open position.

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Limiting Condition for Operation (LCO) 3.5.1 requires SITs to be OPERABLE in MODES 1 and 2, and in MODE 3 with pressurizer pressure ≥ 1750 psia (also Mode 4 ≥ 276 psia for PSL2). The LCO operability criteria includes the required water volume, boron concentration, and nitrogen cover-pressure. Redundant pressure and level instrumentation, including control room alarms are provided to monitor the condition of each SIT during plant operation. If one SIT is inoperable for reasons other than a closed isolation valve, the SIT must be restored to OPERABLE status within one hour, or the plant must transition to HOT SHUTDOWN within the next 8 hours (12 hours for PSL2). If inoperability is due to the isolation valve being closed, the valve must be reopened "immediately" or the plant must transition to HOT STANDBY within one hour and HOT SHUTDOWN within the next 8 hours (12 hours for PSL2).

The PSL bases for LCO 3.5.1 state that the limit of one hour for operation with an inoperable SIT (for any reason except an isolation valve closed) minimizes the time exposure of the plant to a LOCA event occurring concurrent with failure of an additional SIT which may result in unacceptable peak cladding temperatures. If a closed isolation valve cannot be immediately reopened, the full capability of one SIT is not available and prompt action is required to place the reactor in a mode where this capability is not required.

GL 93-05 provides guidance to assist licensees in preparing license amendment requests to implement recommendations contained in NUREG-1366, "Improvements to Technical Specifications Surveillance Requirements," December, 1992, as line-item TS improvements. For plants that have TS in a format that is different than the Standard Technical Specifications (STS), the proposed TS changes should be consistent with the intent of the NUREG recommendations, the guidance of GL 93-05, and the format of the individual plant TS.

Bases for the Proposed Changes

FPL participated in a Combustion Engineering Owners Group (CEOG) effort to perform an integrated assessment of extending the AOTs for a single inoperable SIT. This assessment included recommendations from NUREG-1366 in addition to a risk-based analysis of extending the action requirement to 24 hours for a single SIT that is unable to perform its safety function. The considerations, assumptions, methodologies, and detailed results of this study are reported in CE NPSD-994, "Joint Applications Report

for Safety Injection Tank AOT/STI Extension," Final Report CEOG Task 836, prepared for the CE Owners Group, May, 1995.

Plant specific calculations to assess the risk impact of the AOT extension to 24 hours for PSL1 and PSL2 were performed by FPL using current PSA models and methods that were initially developed in response to GL 88-20, "Individual Plant Examination for Severe Accident Vulnerabilities." CE NPSD-994, as modified by the PSL1/PSL2 corrections to the increase in CDF per year data shown in Table 6.3.2-1, contains the results of FPL's plant specific analyses as well as generic information that is relevant to both St. Lucie Units. The enclosed report, therefore, in combination with recommendations from NUREG-1366/GL 93-05, forms the justification/basis for the proposed license amendments.

1. a. An extension of the action completion time from one hour to the proposed 72 hours to restore boron concentration to within limits was reviewed by the NRC and accepted for use within the generic STS (NUREG-1432, Revision 0), LCO 3.5.1, ACTION A. The basis for this AOT includes recognition that the SIT remains essentially functional in that the liquid volume will remain available for injection during a LOCA and that the reduced concentration effects on core subcriticality during re-flood are minor. Additional discussion of this AOT considering other risk-related arguments contained in this proposal are contained in Section 6.5.2 of CE NPSD-994.

As reported in NUREG-1366, section 7.4, a comprehensive examination of surveillance requirements in TS that require testing during power operation found that the action statement associated with an inoperable accumulator [SIT] is too stringent. A recommendation that an additional condition be established for the specific case where "One accumulator is inoperable due to the inoperability of water level and pressure channels, in which the completion time to restore the accumulator to operable status will be 72 hours," resulted from this finding. PSL1 and PSL2 SITs are designed with redundant level and pressure instrumentation, and FPL agrees with the NRC staff positions stated in NUREG-1366, e.g., it is reasonable to extend the allowable outage time because the SIT instruments do not initiate a safety action; the SIT would be available to fulfill its safety function during this time; and, this change would therefore have a negligible increase on risk.

b. The proposed ACTION-b addresses the case where an SIT may not be able to perform its design safety function, and will provide an AOT of 24 hours to restore that SIT to operable status. The risk-based analysis for PSL1 and PSL2 indicates that continued operation with one SIT unable to perform its design safety function for a period of 24 hours will result in a small increase in "at power risk;" however, when the full scope of plant risk is considered, the risk incurred by extending the AOT to 24 hours for the performance of maintenance activities that could restore the SIT to operable status would be offset by risk benefits associated with averting an unnecessary plant transition to Hot Shutdown. In addition, the proposed AOT extension for a single inoperable SIT is evaluated as having a negligible impact on the large early radiological release probability for CE Pressurized Water Reactors in the event of a design basis accident. The evaluation reported in CE NPSD-994 concludes that increasing the AOT to 24 hours for an inoperable SIT would have a negligible impact on risk from either an instantaneous or cumulative (yearly) basis.

c. If an inoperable SIT cannot be restored to OPERABLE status within the proposed AOTs, the plant must be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. The proposed time to complete these actions is consistent with PSL TS 3.0.3, and the STS (NUREG-1432, Revision 0) LCO 3.5.1 action completion times.

2. a. The proposed change to SR 4.5.1.a.1 clarifies the intent of this SR by using a syntax consistent with that used in the stated operability requirements, and which conforms to the recommendation for this SR contained in GL 93-05, Enclosure 1, Section 7.4. The change is administrative in nature.

b. The proposed clarification to SR 4.5.1.b will remove an element of ambiguity from the stated SR that could potentially, if misinterpreted, result in not performing a required 31 day surveillance. The change is administrative in nature.

c. The proposed change to SR 4.5.1.d (PSL1 only) is editorial. The words to be deleted have no meaning in this context.

3. Removing the reference to verify operability "by the absence of alarms" from SR 4.5.1.1.a.1 (PSL2 only) is consistent with the basis for the proposed change to remove Specification 4.5.1.2 (item 4 below). This, and the proposed clarification to verify that the noted parameters are "within their limits" conform to the recommendation for this SR contained in GL 93-05, Enclosure 1, Section 7.4.
4. The proposed change to SR 4.5.1.2 (PSL2 only) will delete the CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION requirements for SIT instrumentation from the TS. GL 93-05 states, "The NRC staff and industry effort to develop new STS recognized that accumulator instrumentation operability is not directly related to the capability of the accumulators to perform their safety function. Therefore, surveillance requirements for this instrumentation are being relocated from the new STS and the only surveillance that is being retained is that required to confirm that the parameters defining accumulator operability are within their specified limits."

FPL will retain the Channel Functional Test and Channel Calibration surveillances as existing plant procedure requirements. Subsequent changes to such procedures are subject to plant change control procedures and related requirements of the Administrative Controls Section of the TS. The proposed change conforms to the recommendation for this SR contained in GL 93-05, Enclosure 1, Section 7.4.

Conclusion

The current TS only differentiate between action completion times required for an SIT that is inoperable due to a closed isolation valve, and one that is inoperable for any other reason. The proposed changes will provide a two-tiered extension of the SIT AOT to 72 hours for an SIT that must be declared administratively inoperable but can otherwise perform its safety function, and 24 hours for an SIT that may not be able to perform its design function.

The proposed AOT of 72 hours is consistent with the NRC recommendation for a condition where one SIT is declared inoperable due to the inoperability of water level or pressure channels. An



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AOT of 72 hours to restore boron concentration to within limits for an SIT has also been found acceptable by the NRC for use in the STS, and the basis for this action is applicable to both St. Lucie Units.

The risk contributions associated with the proposed AOT extension to 24 hours for a single inoperable SIT unable to perform its design function have been quantitatively evaluated using the current plant specific Probability Safety Assessment for PSL1 and PSL2. The analyses show that the small increase in the calculated "at power risk" is offset by risk benefits that result from averting an unnecessary plant transition to Hot Shutdown. The risk assessment reported in CE NPSD-994 generally conforms to guidance provided in NUREG/CR-6141, "Handbook of Methods for Risk Based Analyses of Technical Specifications," December, 1994. Relative to the average Core Damage Frequency calculated for the appropriate severe accidents, NUREG/CR-6141 states, "A risk-based AOT assures that the single event and yearly AOT risk contributions are acceptable." FPL believes the proposed 24 hour AOT qualifies as a risk-based AOT, and that the proposed amendment is acceptable.

Other revisions in the proposed amendments are consistent with the intent of the referenced NUREG recommendations and the guidance of GL 93-05, where applicable, and are compatible with the narrative format of the individual PSL1 and PSL2 plant specific TS.

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ATTACHMENT 2

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

Pursuant to 10CFR50.92, a determination may be made that a proposed license amendment 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 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 license amendments proposed for St. Lucie Units 1 and 2 incorporate certain line-item Technical Specifications (TS) improvements for the Safety Injection Tanks (SIT), and include an extension of the required action completion/allowed outage time (AOT) from one hour to 72 hours to restore an inoperable SIT (that is still able to perform its safety function) to operable status. In addition, an AOT of 24 hours, based on risk assessment techniques, is proposed for an SIT that may be unable to perform its design function.

The SITs are passive components of the Emergency Core Cooling System (ECCS). As such, they are not accident initiators for any transient evaluated in the plant safety analyses, and an extension of the AOTs for restoring an inoperable SIT to operable status would not increase the probability of occurrence of accidents previously analyzed.

The SITs, in combination with other ECCS components, are used to mitigate the consequences of a loss of coolant accident. The TS revisions will provide a longer AOT for a single inoperable SIT, but do not involve a change to the ECCS configuration or method of operation. The proposed amendments will not change the conditions assumed for the minimum amount of operating equipment needed for accident mitigation. Therefore, the consequences of an accident previously evaluated will not be significantly increased.

In addition to the preceding evaluation, a Probability Safety Assessment (PSA) was performed to quantitatively assess the risk

impact of the 24 hour AOT proposal. The impact on the early radiological release probability for design basis events was also evaluated. It was concluded that the risk contribution from this AOT is very small, and that the impact is negligible.

Therefore, operation of either facility in accordance with its proposed amendment would not involve a significant increase in the probability or consequences of an accident previously evaluated.

(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 proposed amendments will not change the physical plant or the modes of plant operation defined in either Facility License. The changes do not involve the addition or modification of equipment, nor do they alter the design of plant systems. Therefore, operation of either facility in accordance with its proposed amendment would not create the possibility of a new or different kind of accident from any accident previously evaluated.

(3) Operation of the facility in accordance with the proposed amendment would not involve a significant reduction in a margin of safety.

The margin of safety associated with the ECCS system is established by acceptance criteria for system performance defined in 10 CFR 50.46. The proposed amendments will not change this criteria nor the operability requirements for equipment that is used to achieve such performance as demonstrated by the plant safety analyses. Moreover, an integrated assessment of the risk impact of allowing 24 hours to restore an inoperable SIT to operable status has concluded that this impact is very small, and can be offset by averting an unnecessary transition to the shutdown modes. Therefore, operation of either facility in accordance with its proposed amendment would not involve a significant reduction in a margin of safety.

Based on the above discussion and the supporting Evaluation of Technical Specification changes, FPL has determined that the proposed license amendments involve no significant hazards consideration.

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ATTACHMENT 3

ST. LUCIE UNIT 1 MARKED-UP TECHNICAL SPECIFICATION PAGES

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