



FPL

Florida Power & Light Company, 6351 S. Ocean Drive, Jensen Beach, FL 34957

L-99-010

February 23, 1999

10 CFR 50.90

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

Re: St. Lucie Unit 2
Docket No. 50-389
Proposed License Amendment
Boron Dilution Interim LCO

Pursuant to 10 CFR 50.90, Florida Power & Light Company (FPL) requests to amend Facility Operating License NPF-16 for St. Lucie Unit 2 by incorporating the attached Technical Specifications (TS) revisions. The amendment will remove redundant boron concentration monitoring requirements specified for MODES 3 through 6 by deleting TS 3/4.1.2.9, *Reactivity Control Systems-Boron Dilution*. The requirements of this limiting condition for operation (LCO) evolved from interim measures proposed by FPL to detect an unplanned boron dilution transient pending installation and complete functionality of a boron dilution alarm system (BDAS). The BDAS is completely functional at PSL2 and the specification is obsolete. Requirements equivalent to those in the LCO will be included in plant operating procedures as compensatory measures to be implemented in the event the BDAS becomes inoperable when in the applicable modes. The amendment will alleviate the unnecessary burden that is created by processing reactor coolant samples at accelerated frequencies pursuant to the obsolete specification. It is requested that the proposed amendment be issued by February 1, 2000, allowing 60 days for implementation.

Attachment 1 is an evaluation of the proposed TS changes. Attachment 2 is the "Determination of No Significant Hazards Consideration." Attachment 3 contains a copy of the affected TS pages marked-up to show the proposed changes.

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.

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

Very truly yours,

J. A. Stall
Vice President
St. Lucie Plant

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an FPL Group company

St. Lucie Unit 2
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JAS/RLD

Attachments

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

STATE OF FLORIDA)
) ss.
COUNTY OF ST. LUCIE)

J. A. Stall being first duly sworn, deposes and says:

That he is Vice President, St. Lucie Plant, for the Nuclear Division 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.




J. A. Stall

STATE OF FLORIDA
COUNTY OF St. Lucie

Sworn to and subscribed before me
this 23rd day of February, 1999
by J. A. Stall, who is personally known to me.



Signature of Notary Public, State of Florida

 MY COMMISSION # CC646183 EXPIRES
May 12, 2001
BONDED THRU TROY FAIR INSURANCE, INC.

Name of Notary Public (Print, Type, or Stamp)

St. Lucie Unit 2
Docket No. 50-389
Proposed License Amendment
Boron Dilution Interim LCO

ATTACHMENT 1 to L-99-010

EVALUATION OF PROPOSED TS CHANGES

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EVALUATION OF PROPOSED TS CHANGES

1.0 Introduction

The proposed amendment to Facility Operating License NPF-16 for St. Lucie Unit 2 (PSL2) will revise the Technical Specifications (TS) to remove redundant boron concentration monitoring requirements specified for MODES 3 through 6 by deleting TS 3/4.1.2.9, *Reactivity Control Systems-Boron Dilution*. The requirements of this limiting condition for operation (LCO) evolved from interim measures proposed by FPL to detect an unplanned boron dilution transient pending installation and complete functionality of a boron dilution alarm system (BDAS). The BDAS is completely functional at PSL2 and the specification is obsolete. Requirements equivalent to those in the LCO will be included in plant operating procedures as compensatory measures to be implemented in the event the BDAS becomes inoperable when in the applicable modes. The amendment will alleviate the unnecessary burden that is created by processing reactor coolant samples at accelerated frequencies pursuant to the obsolete specification.

The BDAS receives and monitors neutron flux signals from the start-up channels of nuclear instrumentation and provides two redundant channels to ensure the detection and alarming of a boron dilution transient when in Modes 3, 4, 5 and 6. The alarms satisfy the acceptance criteria for minimum time from alarm annunciation to loss of shutdown margin which are specified in Section 15.4.6 of the Standard Review Plan (SRP) for events that require operator action to terminate the transient. The proper alarm setpoints are determined and/or validated for Chemical and Volume Control System (CVCS) malfunction events (boron dilution) prior to each operating cycle as part of the fuel reload safety evaluation. It is concluded in Attachment 2 that the proposed TS changes do not involve a significant hazards consideration.

2.0 Background

2.1 Technical Specification 3/4.1.2.9

TS 3/4.1.2.9 requires the reactor coolant system (RCS) boron concentration to be monitored during the lower operational modes by use of the boronmeter and/or RCS sampling at intervals that are dependent upon the operational mode and number of operable charging pumps. The specification is designed to provide diverse and redundant indications of an inadvertent boron dilution transient during the absence of a completely functional BDAS at PSL2, and thereby assure the availability of a compensatory detection capability that allows sufficient time for manual termination of a boron dilution event before

a complete loss of reactor shutdown margin occurs. The specification was issued as part of the original PSL2 facility operating license.

During construction of St. Lucie Unit 2, FPL committed to the installation of start-up channel [neutron] flux alarms to detect the occurrence of a boron dilution event in MODES 3 through 6. The NRC staff was informed, however, that due to demands on FPL staff during that particular stage of construction, the alarm system could not be installed until late in 1983 (subsequent to initial plant start-up) and would not be completely functional until after the first planned refueling outage. FPL provided the staff with a description of interim measures that would be employed to detect occurrences of inadvertent boron dilution until the alarms are installed. These measures included increased monitoring of RCS boron concentration at frequencies based on the safety analyses performed for CVCS malfunction events. The requirements of TS 3/4.1.2.9 and associated TABLE 3.1-1, *MONITORING FREQUENCIES FOR BACKUP BORON DILUTION DETECTION FOR ST. LUCIE-2*, were developed from interim measures that had been proposed by FPL for implementation until the boron dilution alarms could be made completely functional.

TS 3/4.1.2.9 requires the boron concentration to be verified consistent with the SHUTDOWN MARGIN requirements of Specifications 3.1.1.1, 3.1.1.2, and 3.9.1 once per 8 hours when in operational MODES 3, 4, 5, and 6. Associated Table 3.1-1 provides additional boron concentration monitoring frequencies based on operational mode and number of operable charging pumps, and the required monitoring frequency for the limiting case is 25 minutes (Amendment No. 8, 11/9/84). These requirements are in addition to the verifications of shutdown reactivity required by TS 3.1.1.1, 3.1.1.2, and 3.9.1 which, collectively, cover all six operational modes.

TS 3/4.1.2.9 also includes surveillance requirements for the boronometer when used to monitor boron concentration, and a requirement to determine boron concentration at least once every 50°F change in temperature when performing an RCS heatup or cooldown. In addition, Footnote ** of associated Table 3.1-1 requires two charging pumps to be verified inoperable by racking out their associated motor circuit breakers when in MODE 5 with the RCS level below the hot leg centerline.

2.2 Licensing Basis Documentation Relevant to Development of TS 3/4.1.2.9

(a) Section 15.6.3 of NUREG-0843, Safety Evaluation Report related to the operation of St. Lucie Plant, Unit No. 2, Docket 50-389; USNRC Office of Nuclear Reactor Regulation, October 1981: documents, in part, the staff's request that control room alarms be available to alert the PSL2 operating staff to boron dilution events in all six modes of operation, and that start-up channel flux alarms in Modes 3 through 6 are acceptable. Relative to the limiting boron dilution event (RCS partially drained in MODE 5), the report states, "... the

applicant will establish administrative controls to assure that only one charging pump can be in service when the RCS is partially drained. The staff finds this acceptable."

(b) FPL Letter L-82-434, Robert E. Uhrig (FPL) to Darrell G. Eisenhut (NRC), *Outstanding Work Items*; October 8, 1982 (Docket 50-389): provided a list of engineering and construction items that were not expected to be completed at [initial] core load, and justification for operation of St. Lucie Unit 2 prior to completion of these items. The "Boron Dilution Alarm" is discussed on Page 13 of that list and the justification discussion refers to NRC letter, Docket 50-335, Robert A. Clark (NRC) to Dr. Robert E. Uhrig (FPL), April 26, 1982. The NRC letter transmitted to FPL the staff's revised position relative to a prior commitment to install boron dilution alarms at St. Lucie Unit 1, and is based on an evaluation of the capability of operating pressurized water reactors to provide adequate protection against uncontrolled boron dilution events:

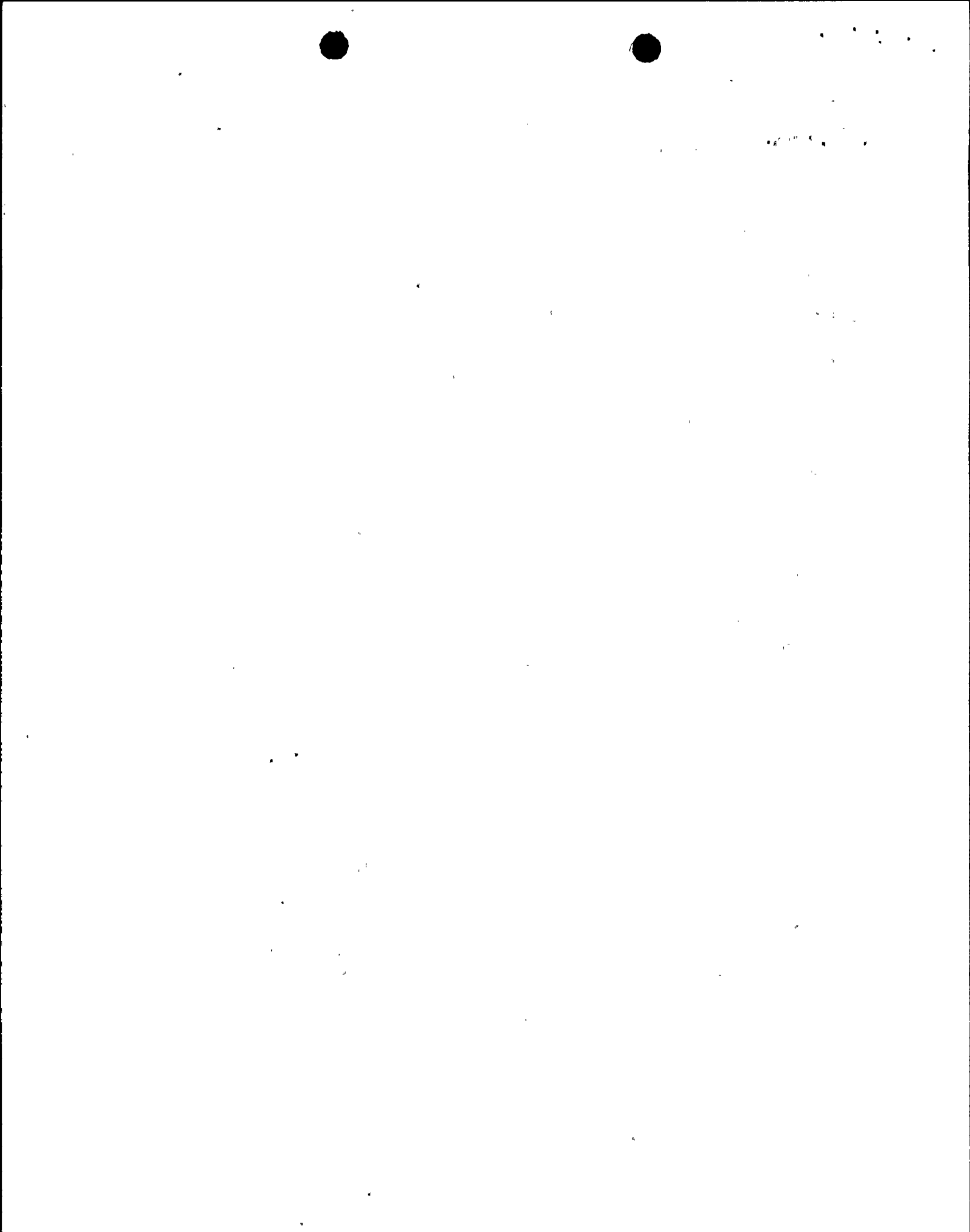
"That evaluation has proceeded to the point where we no longer require that licensed operating reactors install the subject alarms. Our basis for this revised position is contained in Enclosure 1..... Therefore, we no longer require that you install the alarms as committed to in your letter of November 13, 1981. Further evaluation of this issue or future events at nuclear power plants could affect this position; however, we do not expect any evaluations we have planned to restore the requirement for alarms at St. Lucie Unit 1."

Conclusions and recommendations are contained in the enclosure to the NRC letter including a brief discussion of "... a microprocessor-based monitor on the source range neutron flux instrumentation," and the safety significance and consequences of inadvertent criticality as a result of boron dilution events. Section 6.3 of the enclosure states the significance for reload reviews as follows:

"Based on the low estimated frequency and low estimated consequences of an inadvertent criticality, we conclude that boron dilution events do not constitute a significant risk to the public. The licensing process need not wait while this matter is resolved. ..."

Although St. Lucie Unit 2 was still in the construction phase, FPL also stated in L-82-434 that "The NRC position as cited in their letter ... is also applicable to Unit 2 since the two units are virtually identical in this particular aspect," and concluded that "implementation of this design change is not required at this time and reactor operation without the design modification is justified."

(c) FPL Letter L-82-472, Robert E. Uhrig (FPL) to Darrell G. Eisenhut (NRC), *Boron Dilution System Alarm*; October 29, 1982 (Docket No. 50-389): describes FPL's



commitment to install a redundant boron dilution alarm at PSL2 and states, "... the alarm will not be completely functional until after our first planned refueling outage. In the interim, FPL will increase its monitoring frequencies for boron dilution as prescribed on the table below." The table includes calculated intervals for monitoring boron concentration as a function of operational mode and number of operable charging pumps under the heading, *Monitoring Frequencies for Backup Boron Dilution Detection for St. Lucie 2*.

(d) FPL Letter L-82-487, Robert E. Uhrig (FPL) to Darrell G. Eisenhut (NRC), *Boron Dilution System Alarm*; November 4, 1982 (Docket No. 50-389); submitted as a supplement to L-82-472, and includes operating procedure guidelines to clarify the interim measures previously proposed in FPL Letter L-82-472. The attachment provides the basis for each procedure guideline including methods to preclude a boron dilution event in MODE 6. Table 1, *Monitoring Frequencies for Backup Boron Dilution Detection for St. Lucie 2*, also appears in the attachment as a procedure guideline.

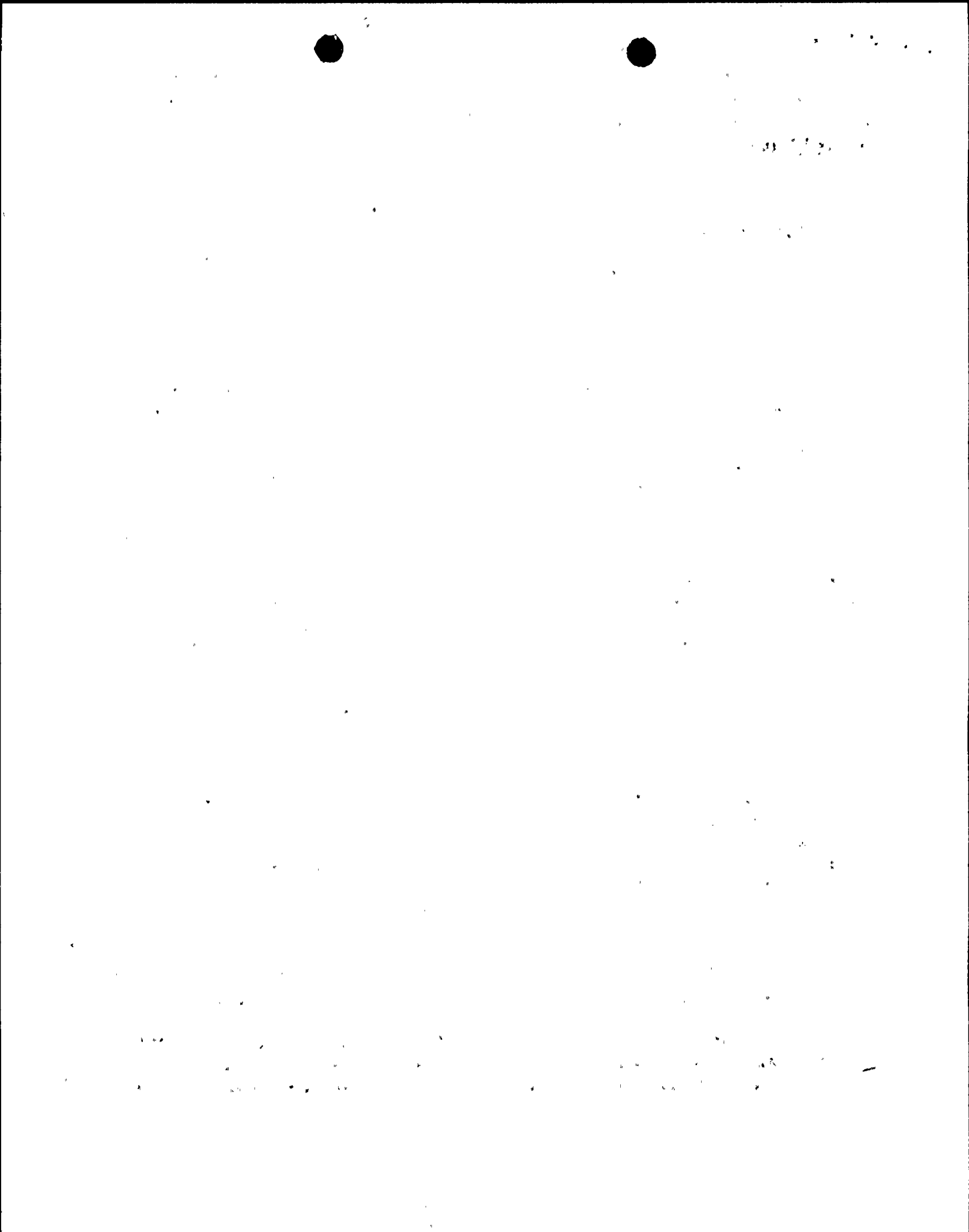
(e) Section 15.6.3 of Supplement No. 3 to NUREG-0843, *Safety Evaluation Report related to the operation of St. Lucie Plant, Unit No. 2, Docket 50-389*; USNRC Office of Nuclear Reactor Regulation, April 1983: documents the NRC staff's review and acceptance of FPL's "procedures, analyses, and technical specifications" associated with protection against inadvertent boron dilution events. Supplement No. 3 clearly characterizes the "interim" nature of the detection measures, and states, in part,

"The St. Lucie Unit 2 Technical Specification will include the above required monitoring procedure and a table specifying the monitoring frequencies for boron dilution detection at various operating mode[s]..." To ensure proper system monitoring during times when changes in RCS temperature may mask changes in core flux (due to a postulated boron dilution event), "... the applicant has included Technical Specifications that require increased monitoring during RCS cooldowns."

This safety evaluation was issued in support of the original PSL2 facility operating license issued April 6, 1983.

(f) Updated Final Safety Analysis Report (UFSAR) Section 15.4.2.3.9, CVCS Malfunction-Inadvertent Boron Dilution (Modes 3, 4, 5, and 6): describes the boron dilution event analysis that is performed to ensure that the start-up channel alarm setpoints satisfy SRP acceptance criteria for the time between alarms and loss of shutdown margin.

(g) UFSAR Section 15.4.2.4, Limiting Loss of Shutdown Margin Event-Slow Positive Reactivity Insertion: includes descriptions of the indications and/or alarms available to warn operators that a boron dilution event is occurring in each of the operational modes.



Additional discussion of the compensatory measures (operational procedure guidelines) to be implemented for instances where start-up channel flux alarms become inoperable in Modes 3, 4, 5, or 6, including consideration of single active failures, is documented in Section 15.4.2.4.4, *Boron Dilution Events-Response to NRC Questions*.

2.3 Boron Dilution Alarm System

The BDAS is completely functional at PSL2 and is described in UFSAR Section 7.7.1.1.11, *Boron Dilution Alarm System*. It is an on-line microcomputer based system which receives and monitors two neutron flux signals (one per BDAS channel) processed from the start-up channels of nuclear instrumentation. The start-up channels are described in UFSAR Section 7.7.1.1.9. Each channel generates an alarm signal which actuates the plant annunciation system when the neutron flux signal is equal to or greater than a calculated alarm setpoint. The BDAS provides redundant control room alarms in the event of an unplanned RCS boron dilution when in MODES 3, 4, 5, or 6, and is capable of being powered from the offsite power source or the onsite backup power source.

The alarm setpoint is specified as the sum of the last known average neutron flux signal voltage and the incremental setpoint voltage. The BDAS logic, which includes the calculated alarm setpoint, is designed to follow the decreasing neutron flux signal after a reactor shutdown occurs, including decreases in the steady-state levels that may result from changes in core configuration during refueling operations. However, if the neutron flux signal increases, the alarm setpoint will not change until a reset signal is manually actuated from the control panel. The manual reset capability allows the alarm to be acknowledged and alarm detection to be reset to the current core configuration. UFSAR Figure 7.7-8b graphically illustrates this design feature.

The calculated BDAS alarm setpoints include an allowance for measurement uncertainties, and are based on a minimum analysis setpoint ratio determined by evaluation of the postulated inadvertent boron dilution event. The analysis setpoint ratio is defined as the ratio of the start-up channel flux corresponding to the alarm setpoint compared to the start-up channel flux prior to the initiation of a boron dilution event. The uncertainty allowance is sufficient to compensate for the effects of RCS temperature variations on the neutron flux signal due to the postulated event.

The BDAS alarms satisfy acceptance criteria for the minimum time from alarm annunciation to loss of shutdown margin (specified in Section 15.4.6 of the SRP) for events that require operator action to terminate the transient, i.e., the minimum time intervals available between the time when an alarm announces an unplanned moderator dilution and the time of loss of shutdown margin must be 15 minutes for Modes 3, 4, and 5, and 30 minutes during refueling. BDAS setpoint adequacy is verified as part of each

core reload evaluation, and changes to the alarm setpoints that may be necessary to assure compliance with the SRP time requirements based on the CVCS malfunction (boron dilution) event analysis are controlled pursuant to 10 CFR 50.59.

3.0 Proposed Changes: Description and Bases/Justification

3.1 Description of Changes

Attachment 3 contains copies of the affected TS pages marked-up to show the proposed changes, and includes INDEX Page IV and LIST OF TABLES Page XXIII.

(a) **TS 3/4.1.2.9, Reactivity Control Systems-Boron Dilution, and Table 3.1-1, Monitoring Frequencies for Backup Boron Dilution Detection for St. Lucie-2,** will be deleted.

(b) **Bases 3/4.1.2.9, Boron Dilution:** This Bases section will be deleted consistent with the deletion of Specification 3/4.1.2.9.

3.2 Basis/Justification for Proposed Changes

If operator action is required to terminate the transient, Section 15.4.6 of the SRP states that a minimum time interval of 15 minutes must be available between the time when an alarm announces an unplanned boron dilution event and the time of loss of shutdown margin during power operation, start-up, hot standby, hot shutdown, and cold shutdown. Thirty minutes warning is required during refueling. FPL committed to the installation of a boron dilution alarm on the start-up neutron flux channels in the St. Lucie Unit 2 control room to satisfy this criteria in the shutdown modes (MODES 3, 4, 5, and 6). The boron dilution alarms were not completely functional at the time the facility operating license was issued, and limiting condition for operation, TS 3/4.1.2.9, *Reactivity Control Systems-Boron Dilution*, with associated TABLE 3.1-1, *MONITORING FREQUENCIES FOR BACKUP BORON DILUTION DETECTION FOR ST. LUCIE-2*, was incorporated into the facility operating license. The specification requires the RCS boron concentration to be monitored when in the applicable modes by use of the boronmeter and/or RCS sampling once per 8 hours, and at other intervals ranging from 24 hours to 25 minutes depending on the operational mode and number of operable charging pumps. In addition, surveillance requirements are specified for the boronmeter when used to monitor boron concentration; determining boron concentration at least once every 50°F change in temperature when performing an RCS heatup or cooldown; and Footnote ** of associated Table 3.1-1 requires at least two charging pumps to be verified inoperable by racking out

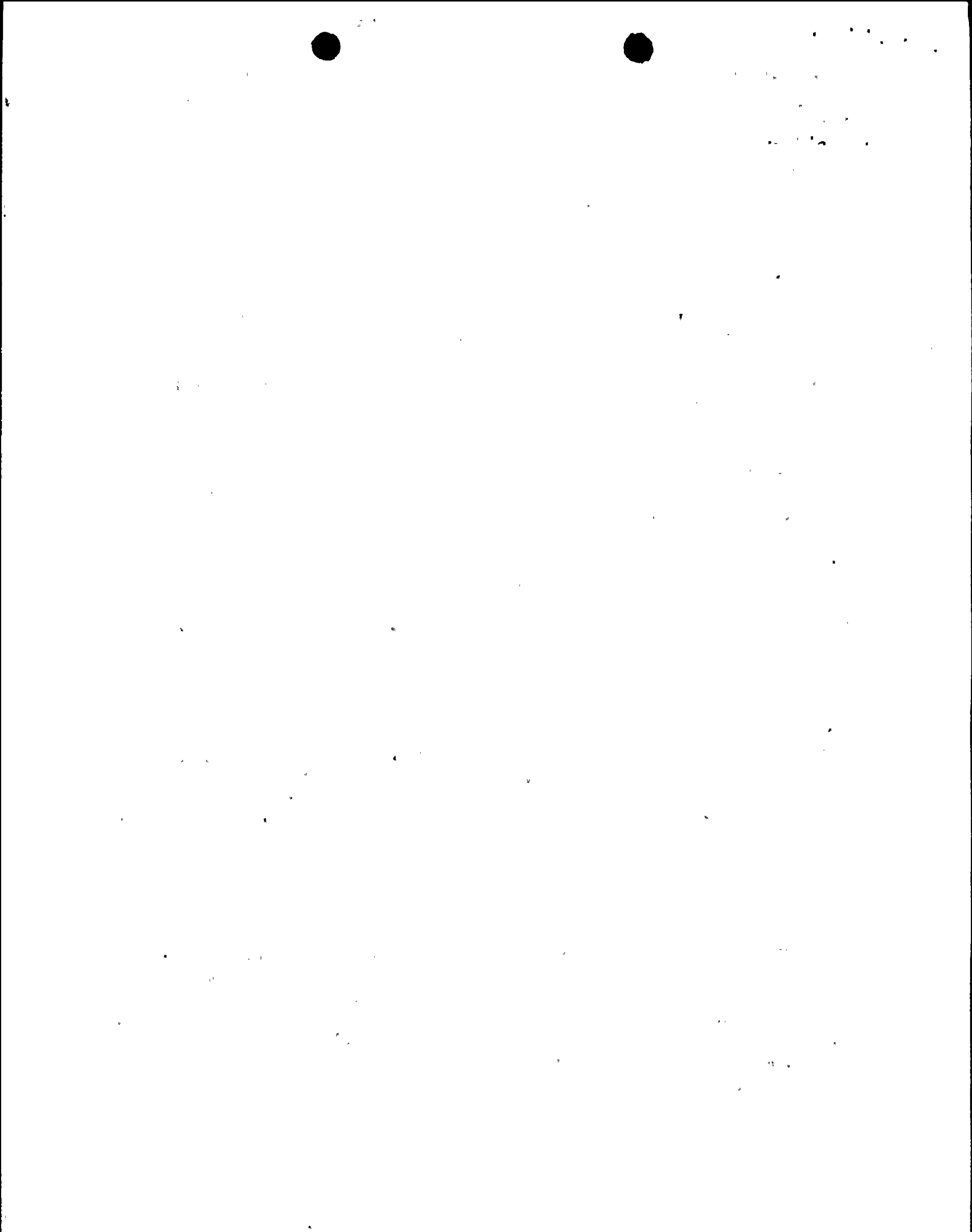
their motor circuit breakers when in MODE 5 with the RCS level below the hot leg centerline.

The specification is designed to provide diverse and redundant indications of an inadvertent boron dilution transient during the absence of a completely functional boron dilution alarm system at PSL2, and thereby assures the availability of a compensatory detection capability that allows sufficient time for manual termination of a boron dilution event before a complete loss of reactor shutdown margin occurs. The monitoring, sampling, and surveillance requirements established by the LCO are in addition to other requirements for RCS boron concentration and shutdown reactivity that are specified in TS 3/4.1.1.1, SHUTDOWN MARGIN- T_{avg} GREATER THAN 200°F, TS 3/4.1.1.2, SHUTDOWN MARGIN- T_{avg} LESS THAN OR EQUAL TO 200°F, and TS 3/4.9.1, REFUELING OPERATIONS-BORON CONCENTRATION.

The requirement to provide an alarm to alert control room operators to a boron dilution transient in MODES 3, 4, 5, and 6 is documented in the licensing basis, UFSAR Section 15.4.2.4, *Limiting Loss of Shutdown Margin Event-Slow Positive Reactivity Insertion*. The staff review and acceptance of procedures, analyses, and technical specifications associated with interim measures proposed by FPL for use until the requisite alarms could be made completely functional is documented in Section 15.6.3 of *Supplement No. 3 to NUREG-0843, Safety Evaluation Report related to the operation of St. Lucie Plant, Unit No. 2, Docket 50-389*: USNRC Office of Nuclear Reactor Regulation, April 1983.

The BDAS is installed and is completely functional at St. Lucie Unit 2. The system is described in Section 7.7.1.1.11 of the PSL2 UFSAR which states, in part, "The Boron Dilution Alarm System (Figure 7.7-8a) utilizes the start-up channel nuclear instrumentation signals to detect a possible inadvertent boron dilution event while in Modes 3-6." The BDAS (microcomputer based) alarm logic is designed to automatically track a decreasing neutron flux signal and thereby maintain the proper alarm setpoint during and after a reactor shutdown. Manual reset action is required to change the setpoint for increases in neutron flux that may occur due to changes in core configuration. Redundant alarms are provided in the control room and the BDAS is capable of being powered from the offsite power source or the onsite backup power source.

Section 15.4.2.3.9 of the PSL2 UFSAR describes the CVCS Malfunction-Inadvertent Boron Dilution event analysis (Modes 3, 4, 5, and 6) that is used to determine and/or validate the BDAS alarm setpoints. The calculated settings include an allowance for measurement uncertainties, and that allowance is sufficient to compensate for the effects of RCS temperature variations on the neutron flux signal due to the postulated event. The alarm setpoints are verified for each fuel cycle to comply with the acceptance criteria stated in Section 15.4.6 of the SRP for the time that must be available for operator action to



terminate the transient. Changes to the BDAS or the BDAS setpoints are controlled pursuant to 10 CFR 50.59.

BDAS operability is maintained in compliance with statements and commitments documented in Sections 7.7.1.1.11, 15.4.2.3.9, and 15.4.2.4 of the UFSAR. Plant operating experience subsequent to the system becoming completely functional (spring 1984) demonstrates that the BDAS is a reliable alarm system, and instrument calibrations are scheduled and performed in accordance with the St. Lucie Preventive Maintenance Program, which is controlled by an approved Administrative Procedure. Copies of completed calibration procedures are retained as quality assurance records.

Each BDAS channel and its corresponding nuclear instrumentation start-up channel remain energized during all modes of operation, but operating voltage is automatically removed from the start-up channel neutron detectors above approximately 10,000 cps to extend detector life as described in Section 7.7.1.1.9 of the PSL2 UFSAR. The reactor shutdown procedure (Normal Operating Procedure) and Emergency Operating Procedures contain action steps that ensure start-up channel detector voltage is restored during a normal reactor shutdown or following a reactor trip. PSL2 annunciator response procedures prescribe operator actions that must be taken in response to a valid BDAS alarm including termination of a dilution that may be in progress, sampling the RCS for boron concentration, and borating the RCS.

In the event one or both BDAS alarms become inoperable when in MODES 3, 4, 5, or 6, operating procedure guidelines equivalent to TS 3/4.1.2.9 will require verification of boron concentration at frequencies consistent with the applicable analysis performed for CVCS Malfunctions-Inadvertent Boron Dilution. This action is consistent with previous discussions with the NRC staff as documented in UFSAR Section 15.4.2.4. In MODE 6, the boron dilution event is precluded because manual isolation valves in the primary makeup water supply to the CVCS and the charging pumps are required to be closed in this mode. This latter requirement and the requirement for increased monitoring of the boron concentration when performing an RCS cooldown are included and will be retained in normal operating procedures.

When the RCS is drained below the hot leg centerline, TS 4.1.1.2.c requires verification that at least two charging pumps are rendered inoperable by racking out their motor circuit breakers. This requirement is based on assumptions that are made for performance of the same boron dilution event analysis which is used to validate the BDAS setpoints. Removing Table 3.1-1 Footnote ** with TS 3/4.1.2.9 simply removes a specification that is redundant to TS 4.1.1.2.c and does not change the requirement for the number of charging pumps that must be rendered inoperable when the RCS is drained below the hot leg centerline.

TS 3/4.1.1.1 (MODES 3, and 4), TS 3/4.1.1.2 (MODE 5), and TS 3.9.1/4.9.1.2 (MODE 6) provide requirements for verification of the shutdown reactivity applicable to each mode and establish surveillance intervals consistent with corresponding LCOs in the Standard Technical Specifications (STS) for Combustion Engineering Plants (NUREG-1432). In addition, redundant channels of the completely functional BDAS provide an automatic, continuous means of detecting an unplanned dilution of the RCS boron concentration in MODES 3 through 6. The additional monitoring with mode and charging pump dependent RCS sampling frequencies required by TS 3/4.1.2.9 does not significantly improve this detection capability and is not necessary for timely detection of an unplanned boron dilution event. Requirements similar to this LCO are not included in the St. Lucie Unit 1 technical specifications or the STS of NUREG-1432.

FPL's commitment to install start-up channel flux alarms to detect boron dilution events in the shutdown modes in addition to the alarms and/or indications available in MODES 1 and 2 is satisfied. The commitment is documented in Section 15.6.3 of NUREG-0843, *Safety Evaluation Report related to the operation of St. Lucie Plant, Unit No. 2, Docket 50-389*; USNRC Office of Nuclear Reactor Regulation, October 1981, wherein the staff concluded: "With these additional alarms the applicant has demonstrated that sufficient alarms and/or indications exist which will alert the operators that a boron dilution event is occurring, for all six modes of operation. We find this acceptable."

4.0 Environmental Consideration

The proposed license amendment changes requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes certain surveillance requirements. The proposed amendment involves no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite, and no significant increase in individual or cumulative occupational radiation exposure. FPL has concluded that the proposed amendment involves no significant hazards consideration, and meets the criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and that, pursuant to 10 CFR 51.22(b), an environmental impact statement or environmental assessment need not be prepared in connection with issuance of the amendment.

5.0 Conclusion

The requirements of TS 3/4.1.2.9 evolved from interim measures that were proposed by FPL to detect an unplanned boron dilution event in MODES 3 through 6 until the boron dilution alarm system became completely functional. The BDAS is completely functional and provides redundant control room alarms consistent with criteria specified in Section 15.4.6 of the SRP. If the BDAS becomes inoperable, procedures will be implemented that require verification of RCS boron concentration consistent with the analysis of CVCS malfunctions (boron dilution), which is the same analysis used to validate the BDAS alarms. Requirements for increased monitoring of the boron concentration when performing an RCS cooldown, and to ensure manual isolation valves for primary makeup water supply to CVCS and charging pumps are closed in MODE 6, will be retained in normal operating procedures. TS 3/4.1.2.9 is obviated by complete functionality of the BDAS, and continued compliance with the obsolete specification is a burden with negligible safety benefit.

St. Lucie Unit 2
Docket No. 50-389
Proposed License Amendment
· Boron Dilution Interim LCO

ATTACHMENT 2 to L-99-010

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

Description of amendment request: The proposed amendment will delete Technical Specification 3/4.1.2.9, Reactivity Control Systems-Boron Dilution, which is obviated by the complete functionality of the Boron Dilution Alarm System (BDAS) at St. Lucie Unit 2.

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 proposed amendment does not involve changes to previously evaluated accident initiators. The proposed deletion of the redundant boron concentration verification requirements do not impact the results of existing accident analyses, and will have no adverse impact on any plant system performance. TS 3/4.1.2.9 provides mode and charging pump dependent monitoring requirements for RCS boron concentration that are designed to detect an unplanned boron dilution event in MODES 3 through 6 in the absence of an automatic alarm system, and is based on the time requirements for operator action specified in Section 15.4.6 of the Standard Review Plan (SRP). This specification evolved from interim measures that were proposed by FPL until the boron dilution alarm system (BDAS) could be made completely functional following initial start-up of St. Lucie Unit 2. The BDAS is completely functional and provides redundant control room alarms to alert operators to the occurrence of an unplanned boron dilution event in Modes 3 through 6. The alarm setpoints are based on Chemical and Volume Control System (CVCS) malfunction analyses, and satisfy the same SRP acceptance criteria upon which the monitoring requirements of TS 3/4.1.2.9 were based. Therefore, operation of the facility in accordance with the proposed amendment will 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 amendment will not change the physical plant or the modes of operation defined in the facility license. The amendment will remove requirements from the facility technical specifications that were proposed by FPL as interim measures until the boron dilution alarm system became completely functional. The amendment will not alter the design of St. Lucie plant systems described in the Updated Final Safety Analysis Report (UFSAR), and the plant configuration will continue to remain consistent with assumptions used in the existing accident analyses. Therefore, 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.

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

The proposed amendment has been evaluated with respect to the applicable safety analyses. The BDAS provides a continuous, early warning capability to detect a boron dilution event in Modes 3, 4, 5 and 6, and satisfies the same SRP time requirements for operator action as the interim TS that is proposed for deletion. BDAS setpoints are determined and/or validated for each fuel cycle to ensure they remain consistent with the CVCS malfunction analyses of record, and changes that may become necessary are controlled pursuant to 10 CFR 50.59. The minimum required Shutdown Margin is not changed by this proposal. Therefore, operation of the facility in accordance with the proposed amendment would not involve a significant reduction in a margin of safety.

Based on the discussion presented above and on the supporting Evaluation of Proposed TS Changes, FPL has concluded that this proposed license amendment involves no significant hazards consideration.