

ATTACHMENT I

ST. LUCIE UNIT I

Marked-up Technical Specification Page:

3/4 10-1

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3/4.10 SPECIAL TEST EXCEPTIONS

SHUTDOWN MARGIN

LIMITING CONDITION FOR OPERATION

3.10.1 The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 may be suspended for measurement of CEA worth and shutdown margin provided reactivity equivalent to at least the highest estimated CEA worth is available for trip insertion from OPERABLE CEA(s).

APPLICABILITY: MODE 2.

ACTION:

- a. With any full length CEA not fully inserted and with less than the above reactivity equivalent available for trip insertion, immediately initiate and continue boration at ≥ 40 gpm of 1720 ppm boric acid solution or its equivalent until the SHUTDOWN MARGIN required by Specification 3.1.1.1 is restored.
- b. With all full length CEAs inserted and the reactor subcritical by less than the above reactivity equivalent, immediately initiate and continue boration at ≥ 40 gpm of 1720 ppm boric acid solution or its equivalent until the SHUTDOWN MARGIN required by Specification 3.1.1.1 is restored.

SURVEILLANCE REQUIREMENTS

4.10.1.1 The position of each full length CEA required either partially or fully withdrawn shall be determined at least once per 2 hours.

4.10.1.2 Each CEA not fully inserted shall be demonstrated capable of full insertion when tripped from at least the 50% withdrawn position within ~~24 hours~~ prior to reducing the SHUTDOWN MARGIN to less than the limits of Specification 3.1.1.1.

7 days

ATTACHMENT 2

ST. LUCIE UNIT 2

Marked-up Technical Specification Page:

3/4 10-1

3/4.10 SPECIAL TEST EXCEPTIONS

3/4.10.1 SHUTDOWN MARGIN

LIMITING CONDITION FOR OPERATION

3.10.1 The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 may be suspended for measurement of CEA worth, MTC, and SHUTDOWN MARGIN provided reactivity equivalent to at least the highest estimated CEA worth is available for trip insertion from OPERABLE CEA(s).

APPLICABILITY: MODES 2 and 3*.

ACTION:

- a. With any full-length CEA not fully inserted and with less than the above reactivity equivalent available for trip insertion, immediately initiate and continue boration at greater than or equal to 40 gpm of a solution containing greater than or equal to 1720 ppm boron or its equivalent until the SHUTDOWN MARGIN required by Specification 3.1.1.1 is restored.
- b. With all full-length CEAs fully inserted and the reactor subcritical by less than the above reactivity equivalent, immediately initiate and continue boration at greater than or equal to 40 gpm of a solution containing greater than or equal to 1720 ppm boron or its equivalent until the SHUTDOWN MARGIN required by Specification 3.1.1.1 is restored.

SURVEILLANCE REQUIREMENTS

4.10.1.1 The position of each full-length CEA required either partially or fully withdrawn shall be determined at least once per 2 hours.

4.10.1.2 Each CEA not fully inserted shall be demonstrated capable of full insertion when tripped from at least the 50% withdrawn position within *7 days* ~~2 days~~ prior to reducing the SHUTDOWN MARGIN to less than the limits of Specification 3.1.1.1.

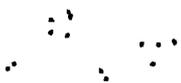
* Operation in MODE 3 shall be limited to 6 consecutive hours.

SAFETY EVALUATION

The proposed amendment would revise the Technical Specification 4.10.1.2, Special Test Exceptions-Shutdown Margin, Surveillance Requirement which requires that each control element assembly (CEA) not fully inserted shall be demonstrated capable of full insertion, when tripped from at least the 50% withdrawn position, within 24 hours prior to reducing the shutdown margin to less than the limits specified by Technical Specification 3.1.1.1. The proposed change would revise the surveillance frequency for tripping the plant to demonstrate insertability of CEAs from "within 24 hours" to "within seven days" prior to reducing the shutdown margin to less than the limits of Technical Specification 3.1.1.1.

During low power physics testing, following a refueling outage, tests are performed to verify physics parameters. The tests to determine the CEA group worths may result in a reduction of the shutdown margin below that normally required for MODES 2 and 3. Prior to reducing shutdown margin below the Technical Specification limit, any CEA that is not fully inserted is required to have been demonstrated capable of full insertion within the past 24 hours. The group worth tests typically commence more than 24 hours after initial criticality. Therefore, an additional scram is required to comply with the present surveillance requirement. This additional scram causes increased component wear, complicates and delays completion of the low power physics tests, and results in decreased plant availability. A change is proposed to extend the time prior to the reduction of shutdown margin such that CEA insertion capability be demonstrated within the previous seven days, rather than 24 hours as is presently required by Technical Specification 4.10.1.2.

The requirement to demonstrate CEA insertability is based on crediting each CEA's reactivity worth for shutdown margin. It should be noted that the requirements of Technical Specification 3.1.3.4 "CEA Drop Time" continue irrespective of the proposed change described herein. That is, CEA drop time will be verified: a) for all CEAs following each removal of the reactor vessel head, b) for specifically affected individual CEAs following any maintenance on or modification to the CEA drive system which could affect the drop time of those specific CEAs. Therefore, during the proposed seven day Surveillance Requirement of 3.10.1 there cannot be maintenance activity on the CEAs without requiring drop time testing prior to entering the Special Test Exception on Shutdown Margin. The proposed Technical Specification 3.10.1 modification of 24 hours to seven days, therefore, does not produce any change which could directly affect CEA response to a scram signal.



The proposed Technical Specification modification would change the probability of a stuck CEA occurring between the time when the CEAs are demonstrated capable of full insertion and the time of the physics tests by 1.3×10^{-3} based on site operating data. This small effect will have an insignificant impact to the combined probability of a positive reactivity insertion event occurring and a CEA not inserting due to the change in the Surveillance requirements. Even though the change in combined probability is small, a transient by transient review has been performed to document the effects of the proposed Technical Specification change.

Accident analyses are not performed specifically for the period of time during physics testing when the Special Test Exception for Shutdown Margin is applicable. A review of the transients which can cause positive reactivity insertion during operation in Modes 2 and 3 indicates that the events to be addressed are: uncontrolled CEA withdrawal, inadvertent boron dilution, and CEA ejection and cooldown events. Heatup events at beginning of cycle conditions can produce positive reactivity under positive Moderator Temperature Coefficient (MTC) conditions. However, with significant CEA insertion it is anticipated that the MTC at the condition of interest would be negative and would result in a negative reactivity insertion during a heatup event.

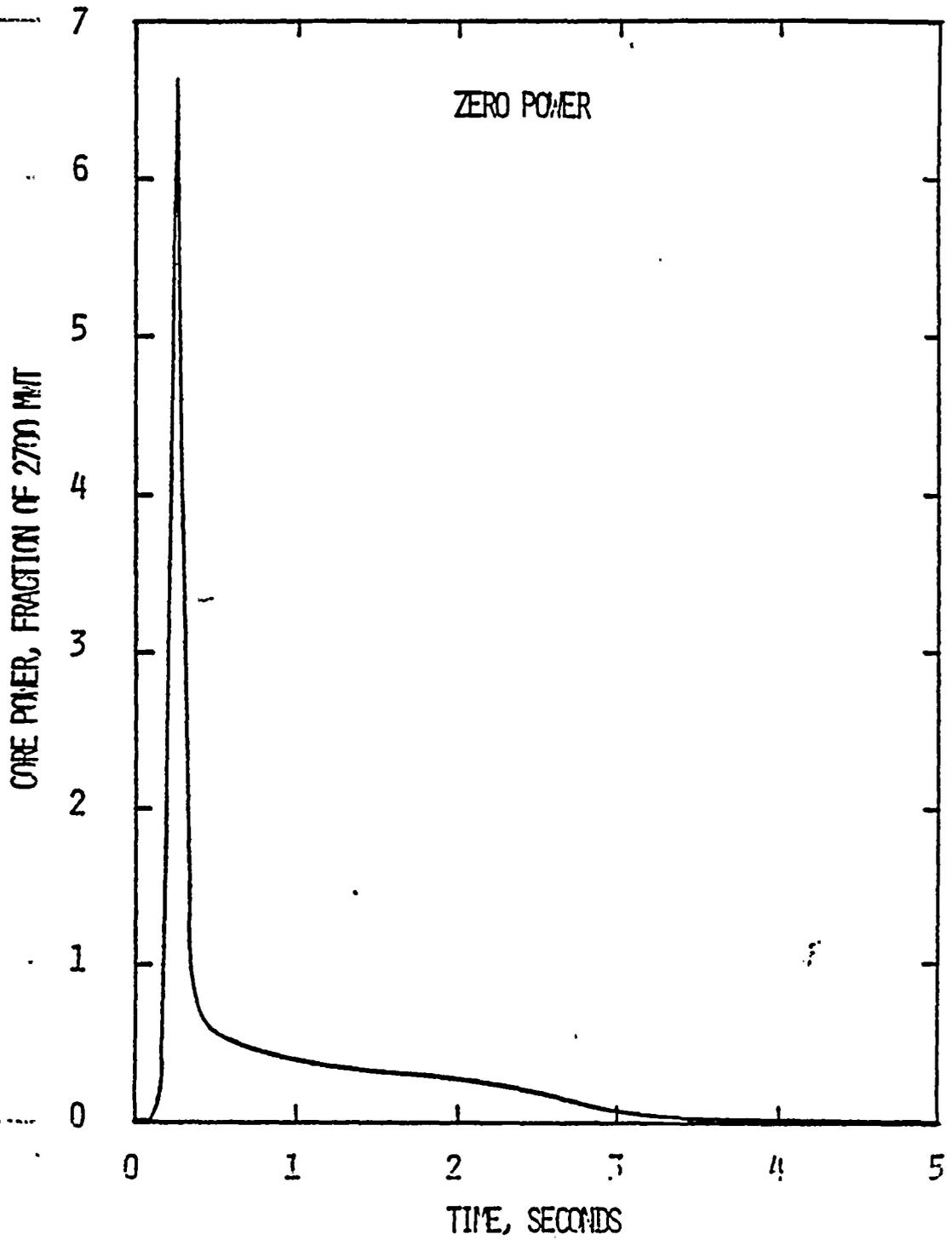
In the case of the uncontrolled CEA withdrawal event, the reactor protective system (RPS), through operation of the Variable High Power or Rate of Change of Power trips, provides protection against the consequences of this event. Furthermore, no failure which can cause CEA withdrawal can prevent insertion of a CEA group upon receipt of any RPS trip signal since the CEAs insert as a result of gravitational forces after removal of power to the control element drive mechanism system. Therefore, no significant change in the results and consequences of this event would be expected based on the proposed change.

The inadvertent boron dilution analysis at critical conditions is bounded by the uncontrolled CEA withdrawal event. It should be noted that during physics testing operators are required to maintain operating conditions stable. Therefore, as a result of this heightened attention, an inadvertent boron dilution would be terminated quickly with little positive reactivity insertion. Since this transient is bounded by the uncontrolled CEA withdrawal, operator action would be expected quickly during physics testing, and there is no significant change anticipated in the available shutdown margin due to the proposed change it is concluded that the results and consequences of this type of event have not been significantly altered.

The CEA ejection event from Hot Zero Power (HZP) conditions results in a significant power increase for a brief period. The power increase is terminated by the negative reactivity produced by the Fuel Temperature Coefficient. Reactor shutdown is initiated by the high power level trip. As shown by the HZP CEA ejection power trace from the St. Lucie Unit 2 FSAR (Figure 1), the power level is minimal when the CEAs are predicted to begin insertion. A conservative calculation of the increased probability of a CEA ejection event from HZP with a stuck CEA has been performed. It has been determined that the change in probability of a CEA ejection with a stuck CEA is 1.0×10^{-9} when the requirement for trip testing is extended from 24 hours to seven days. This increase represents a negligible increase in the risk to the public when compared to the safety goal proposed by the NRC in NUREG-0880. Therefore, it is concluded that the results and consequences of this type of event have not significantly changed due to the proposed Technical Specification change.

The events leading to possible overcooling of the reactor coolant system (RCS) include: Main Steam Line Break, Main Feedwater Line Break, Main Steam Safety Valve (MSSV) Spuriously Open, and Inadvertent Opening of the Atmospheric Dump Valve (ADV). A limiting RCS overcooling event may in general result in a post-trip return to power, due to accompanying moderator cooldown, if sufficient shutdown rod worth is not available. However, it has been conservatively determined that the probability of an RCS overcooling event with a stuck CEA has increased by 7.4×10^{-7} when the requirement for trip testing is extended from 24 hours to seven days. Therefore, it is concluded that the results and consequences of this type of event have not significantly changed due to the proposed Technical Specification change.

The transients which can insert positive reactivity under the conditions applicable to startup physics testing have been reviewed and evaluated. It has been demonstrated that the proposed Technical Specification change has no significant impact on the results and consequences of these events.



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CONTROL ELEMENT ASSEMBLY EJECTION EVENT
CORE POWER VS TIME

FIGURE
3.2.4.6-2

DETERMINATION OF NO SIGNIFICANT HAZARDS

The standards used to arrive at a determination that a request for amendment involves no significant hazards consideration are included in the Commission's regulations, 10CFR50.92, 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 plant is essentially operated in the same manner as before and no change in plant configuration has occurred. Therefore, there is no increase in the probability of accidents previously evaluated.

The proposed Technical Specification change modifies the Surveillance Requirements prior to entry into the Special Test Exception for Shutdown Margin. The safety evaluation has been performed to demonstrate that the proposed change in Surveillance Requirements provides essentially the same assurance that the requirement to provide the reactivity equivalent to at least the highest estimated CEA worth is available for trip insertion from OPERABLE CEAs described in the Technical Specifications is fulfilled. Therefore, it is determined that the consequences of an accident previously evaluated has not significantly increased.

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

The plant is operated essentially in the same manner as before and no change in plant configuration is involved. Therefore, there will be no possibility of a new or different accident.

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

The Technical Specification for the minimum required Shutdown Margin during the Special Test Exception has not been modified. The proposed change only addresses the Surveillance Requirement of trip testing of CEAs 24 hours prior to entering the Special Test Exception. The safety evaluation has determined that the change in Surveillance Requirement will have no significant change in the probability that sufficient CEA worth is available in the event of a transient. Therefore, the proposed change will not cause a significant reduction in any margin of safety.

Based on the above, 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 or 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.

