



JUL 29 2002

L-2002-152
10 CFR 50.90
10 CFR 50.91

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

RE: Turkey Point Unit 4
Docket No. 50-251
Proposed License Amendment
Inoperable Rod Position Indication

Pursuant to 10 CFR 50.90 and 10 CFR 50.91(a)(6), Florida Power and Light Company (FPL) requests exigent approval of changes to the Turkey Point Unit 4 Facility Operating License DPR-41 by incorporating the attached Technical Specification (TS) revision. This revision is being requested due to an inoperable control rod position indicator. The proposed amendment would revise applicable Technical Specifications to allow the use of an alternate method of determining rod position for the control rod with the inoperable RPI.

Attachment 1 is an evaluation of the proposed change. Attachment 2 is the "Determination of No Significant Hazards Consideration." Attachments 3 and 4 contain copies of the affected Technical Specifications pages marked-up and a clean copy of the proposed revision, respectively.

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

FPL is requesting that this amendment be processed as an exigent amendment request pursuant to 10 CFR 50.91(a)(6). The reason for the exigency is due to the unanticipated failure of the Turkey Point Unit 4 Analog Rod Position Indication (RPI) for control rod C-9 in Shutdown Bank A, declared inoperable on July 25, 2002, at 0707 (EDT). Additionally, there is concern regarding excessive wear of the incore system due to exercising the movable incore detectors every 8 hours (90 times per month), to comply with the compensatory actions required by the current action statement a. of TS 3.1.3.2.

Accl

The failure of the RPI for control rod C-9 resulted in erratic position indication from 230 steps to 190 steps, with Shutdown Bank A all rods out position at 230 steps. Troubleshooting activities outside containment have indicated that the erratic position indication is due to issues with the RPI on the reactor head. Further investigation and repair of the RPI System, with the reactor at power, is precluded due to personnel safety issues regarding high temperature, working conditions on the reactor head, and ALARA concerns. For the plant to conduct a shutdown to Mode 5 to repair the inoperable RPI at this time would present undesirable plant transients. Repairs will be performed at the earliest opportunity, when Turkey Point Unit 4 enters Mode 5 and the outage is of sufficient duration to effect the repairs, but no later than Unit 4 Cycle 21 refueling outage in October, 2003.

With one analog rod position indicator inoperable, action statement a. of TS 3.1.3.2 currently requires that 1.) Determine the position of the non-indicating rod(s) indirectly by the movable incore detectors at least once per 8 hours and within one hour after any motion of the non-indicating rod which exceeds 24 steps in one direction since the last determination of the rod's position, or 2.) Reduce THERMAL POWER to less than 75% of RATED THERMAL POWER within 8 hours.

FPL is currently implementing action statement a.1. Implementation of the request contained in this submittal will allow the use of an alternate method of determining rod position for the control rod with the inoperable RPI. The method to be used will monitor the stationary gripper coil of the C-9 Control Rod Drive Mechanism (CRDM). This alternate method is applied to the inoperable C-9 RPI in the following TS sections and associated Surveillance Requirements:

- 3/4.1.3.1, Movable Control Assemblies
- 3/4.1.3.2, Position Indicating Systems - Operating
- 3/4.1.3.5, Shutdown Rod Insertion Limit

The proposed changes have been evaluated in accordance with 10CFR50.91(a)(1), using the criteria in 10CFR50.92(c). FPL has determined that the proposed changes involve no significant hazards considerations.

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Upon approval of the proposed change, FPL requests that the amendment be made effective on the date of issuance.

Please contact Walter Parker, Licensing Manager, at (305) 246-6632, if there are any questions regarding this submittal.

Very truly yours,


J. P. McElwain
Vice President
Turkey Point Plant

WJP

Attachments

cc: Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant
Mr. W. A. Passetti, Florida Department of Health

STATE OF FLORIDA)
) ss.
COUNTY OF MIAMI-DADE)

J. P. McElwain 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.



J. P. McElwain

STATE OF FLORIDA

COUNTY OF Miami-Dade

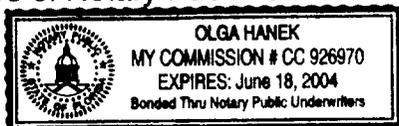
Sworn to and subscribed before me

this 29th day of July, 2002

by, J. P. McElwain who is personally known to me.



Signature of Notary Public-State of Florida



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

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EVALUATION OF PROPOSED TS CHANGE

EVALUATION OF PROPOSED TS CHANGE

BACKGROUND

Pursuant to 10 CFR 50.90 and 10 CFR 50.91(a)(6), Florida Power and Light Company (FPL) requests that Turkey Point Unit 4 Technical Specification (TS) 3/4.1.3.1, 3/4.1.3.2 and 3/4.1.3.5 be modified to allow the use of an alternate method of determining rod position for the control rod with the inoperable RPI. This would be effective until repair of the indication system can be completed.

The proposed changes provide adequate controls to ensure that the rod position is known and to ensure that a rod drop or misalignment is detectable. The justification of the requested changes concludes that the increase in the likelihood of an undetected rod drop or misalignment is negligible and that the basis and consequences of the accident analyses are maintained.

DESCRIPTION OF PROPOSED TS CHANGE

The proposed Unit 4 Technical Specification changes are summarized below. Marked-up and clean Technical Specification pages for the proposed changes are provided as Attachments 3 and 4.

With one analog rod position indicator inoperable, action statement a. of TS 3.1.3.2 currently requires that 1.) Determine the position of the non-indicating rod(s) indirectly by the movable incore detectors at least once per 8 hours and within one hour after any motion of the non-indicating rod which exceeds 24 steps in one direction since the last determination of the rod's position, or 2.) Reduce THERMAL POWER to less than 75% of RATED THERMAL POWER within 8 hours. FPL is currently implementing action statement a.1. A description of the proposed changes is provided below.

For TS 3/4.1.3.1, Movable Control Assemblies, 3/4.1.3.2, Position Indicating Systems – Operating, and 3/4.1.3.5, Shutdown Rod Insertion Limit, the following note is added to sections relating to the use of analog rod position indication:

“During Unit 4 Cycle 20, the position of Rod C-9 Shutdown Bank A will be determined every 8 hours by an alternate method other than the Analog Rod Position Indication system, until the repair of the indication system for this rod is completed.”

For Surveillance Requirement of 4.1.3.1.1, the following note is added regarding the use of analog rod position indication:

“During Unit 4 Cycle 20, the position of rod C-9, Shutdown Bank A, may be monitored by alternate methods that will not provide an input into the Rod Position Deviation

Monitor. The use of the alternate method for rod C-9 does not require the 4 hour comparison of demanded versus actual position per 4.1.3.1.1.”

Additionally, for Surveillance Requirements of 4.1.3.2.1, the following note is added regarding the use of analog rod position indication:

“During Unit 4 Cycle 20, the position of rod C-9, Shutdown Bank A, may be monitored by alternate methods that will not provide an input into the Rod Position Deviation Monitor. The use of the alternate method for rod C-9 does not require the 4 hour comparison of demanded versus actual position per 4.1.3.2.1.”

JUSTIFICATION FOR PROPOSED TS CHANGE

As described in the bases for Specification 3.1.3, the purpose of the rod control system, of which the RPIs are an integral part, is to ensure that: “(1) acceptable power distribution limits are maintained, (2) the minimum SHUTDOWN MARGIN is maintained, and (3) the potential effects of rod misalignment on associated accident analyses are limited. OPERABILITY of the control rod position indicators is required to determine control rod positions and thereby ensure compliance with the control rod alignment and insertion limits.”

FPL has determined that these objectives can be met with an inoperable RPI in a shutdown bank without subjecting the movable incore system to unnecessary additional wear. FPL will install a recorder to track parameters of the stationary gripper coil of the Control Rod Drive Mechanism (CRDM) on the non-indicating rod; FPL will verify at least once every 8 hours that the coil has not changed state. This 8-hour surveillance period is consistent with the current operational requirements for control rod C-9 position determination. If the coil has changed state, a determination of control rod C-9 position will be made by using the movable incore detector system in accordance with plant procedures. At least once every 31 effective full power days, a determination of control rod C-9 position will be made, using the movable incore system.

In summary, FPL concludes that the proposed change will ensure that the intent of Technical Specifications are met.

In evaluating the requested change, the following conditions were considered:

- Rod Drop or Rod Misalignment During Power Operation
- Rod Drop or Rod Misalignment During Reactor Startup
- Reactor Trip

Rod Drop or Rod Misalignment During Power Operation

A full rod drop of control rod C-9 would be immediately detectable by other means than the position indication system. Independent indication of a dropped control rod is obtained by using the excore power range signals. This rod drop detection circuit is actuated upon sensing a rapid decrease in flux and is designed such that normal load variations do not cause it to be actuated. Furthermore, a negative reactivity insertion corresponding to the reactivity worth of a full rod drop of control rod C-9 would cause a noticeable change in core parameters including core average temperature and axial flux due to its relative worth and location near the periphery of the core.

A rod misalignment may also be detectable by other means, e.g. axial flux deviation, channel deviation alarm, and the required operator actions would therefore not be dependent on the status of the individual rod position indication system.

With alternate CRDM parameter monitoring and rod drop/misalignment parameter indications, the increase in the likelihood of an undetected rod drop or misalignment is considered to be negligible.

Rod Drop or Misalignment During Reactor Startup

Since the movable incore detectors cannot be used to determine rod position until sometime after entry into Mode 2 when neutron flux becomes adequate, the alternate method will be utilized during a reactor startup to provide initial verification that Rod C-9 is fully withdrawn. This alternate method would only be used as a means of verifying rod position if the startup occurs as a result of an unplanned outage that does not permit repair of the indicating circuit. The proposed method would be utilized to verify that the rod is fully withdrawn. Rod position verification using this method will permit startup and entry into Mode 2. As a second diverse check, the movable incore detectors will be used to verify rod position when neutron flux becomes adequate. Following verification that the rod is withdrawn, a rod misalignment would be detectable by means other than the rod position indication system, e.g. CRDM trace monitoring, axial flux deviation, channel deviation alarm, and the required operator actions would therefore not be dependent on the status of the individual rod position indication.

The increase in the likelihood of an undetected rod drop or misalignment is therefore considered to be negligible.

Reactor Trip

Following a reactor trip, the position indication system is used to verify that all rods have fully inserted. Emergency boration is required if more than one rod fails to fully insert. The inoperability of the position indication system prevents verification of insertion for the

subject rod during a reactor trip. Administrative controls will be used to heighten reactor operator awareness that the rod position indication for Rod C-9 is inoperable. This will ensure that emergency boration is initiated as required if another control rod other than C-9 does not fully insert.

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DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

The Commission has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92. A proposed amendment to an operating license for a facility involves no significant hazards consideration if operation of the facility in accordance with a 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.

Florida Power and Light Company (FPL) has concluded that the proposed amendment to the Turkey Point Unit 4 operating license does not involve a significant hazards consideration. In support of this determination, an evaluation of each of the three standards set forth in 10 CFR 50.92 is provided below.

1. Will operation of the facility in accordance with this proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

No. The proposed change provides an alternative method for verifying rod position of one shutdown rod. The proposed change meets the intent of the current specification in that it ensures verification of position of the shutdown rod once every eight (8) hours. The proposed change provides only an alternative method of monitoring shutdown rod position and does not change the assumption or results of any previously evaluated accident.

Therefore, 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.

2. Will operation of the facility in accordance with this proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

No. As described above, the proposed change provides only an alternative method of determining the position of one shutdown rod. No new accident initiators are introduced by the proposed alternative manner of performing rod position verification. The proposed change does not affect the reactor protection system or the reactor control system. Hence, no new failure modes are created that would cause a new or different kind of accident from any accident previously evaluated.

Therefore, operation of the facility in accordance with the proposed amendments would not create the possibility of a new or different kind of accident from any previously evaluated.

3. Will operation of the facility in accordance with this proposed change involve a significant reduction in a margin of safety?

No. The bases of Specification 3.1.3.2 state that the operability of the rod position indicators is required to determine control rod positions and thereby ensure compliance with the control rod alignment and insertion limits. The proposed change does not alter the requirement to determine rod position but provides an alternative method for determining the position of the affected rod. As a result, the initial conditions of the accident analysis are preserved and the consequences of previously analyzed accidents are unaffected.

Therefore, operation of the facility in accordance with the proposed amendments would not involve a significant reduction in the margin of safety.

Based on the reasoning presented above, FPL has determined that the requested changes involve no significant hazards consideration.

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. 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 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.

Conclusion

FPL concludes, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be detrimental to the common defense and security or to the health and safety of the public.

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TURKEY POINT UNIT 4 MARKED UP TECHNICAL SPECIFICATION PAGES

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Pages 3/4 1-18
Pages 3/4 1-20
Pages 3/4 1-21
Pages 3/4 1-25

REACTIVITY CONTROL SYSTEMS

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

GROUP HEIGHT

LIMITING CONDITION FOR OPERATION

3.1.3.1 All full length (shutdown and control) rods shall be OPERABLE and positioned within the Allowed Rod Misalignment between the Analog Rod Position Indication and the group step counter demand position within one hour after rod motion. The Allowed Rod Misalignment shall be defined as:

- a. for THERMAL POWER less than or equal to 90% of RATED THERMAL POWER, the Allowed Rod Misalignment is ± 18 steps, and
- b. for THERMAL POWER greater than 90% of RATED THERMAL POWER, the Allowed Rod Misalignment is ± 12 steps.

APPLICABILITY: MODES 1* and 2*

ACTION:

- a. With one or more full length rods inoperable due to being immovable as a result of excessive friction or mechanical interference or known to be untrippable, determine that the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied within 1 hour and be in HOT STANDBY within 6 hours.
- b. With more than one full length rod inoperable or misaligned from the group step counter demand position by more than ± 12 steps and THERMAL POWER greater than 90% of RATED THERMAL POWER, within 1 hour either:
 - 1. Restore all indicated rod positions to within the Allowed Rod Misalignment, or
 - 2. Reduce THERMAL POWER to less than 90% of RATED THERMAL POWER and confirm that all indicated rod positions are within the Allowed Rod Misalignment, or
 - 3. Be in HOT STANDBY within the following 6 hours.
- c. With more than one full length rod inoperable or misaligned from the group step counter demand position by more than ± 18 steps and THERMAL POWER less than or equal to 90% of RATED THERMAL POWER, within 1 hour either:
 - 1. Restore all indicated rod positions to within the Allowed Rod Misalignment, or
 - 2. Be in HOT STANDBY within the following 6 hours.

** During Unit 4 Cycle 20, the position of Rod C-9 Shutdown Bank A will be determined every 8 hours by an alternate method other than the Analog Rod Position Indication system, until the repair of the indication system for this rod is completed.

*See Special Test Exceptions 3.10.2 and 3.10.3.

REACTIVITY CONTROL SYSTEMS
LIMITING CONDITION FOR OPERATION (Continued)

- d. With one full length rod inoperable due to causes other than addressed by ACTION a, above, or misaligned from its group step counter demand position by more than the Allowed Rod Misalignment of Specification 3.1.3.1, POWER OPERATION may continue provided that within one hour either:
1. The rod is restored to OPERABLE status within the Allowed Rod Misalignment of Specification 3.1.3.1, or
 2. The remainder of the rods in the bank with the inoperable rod are aligned to within the Allowed Rod Misalignment of Specification 3.1.3.1 of the inoperable rod while maintaining the rod sequence and insertion limits of Specification 3.1.3.6; the THERMAL POWER level shall be restricted pursuant to Specification 3.1.3.6 during subsequent operation, or
 3. The rod is declared inoperable and the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied. POWER OPERATION may then continue provided that:
 - a) The THERMAL POWER level is reduced to less than or equal to 75% of RATED THERMAL POWER within one hour and within the next 4 hours the power range neutron flux high trip setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER. THERMAL POWER shall be maintained less than or equal to 75% of RATED THERMAL POWER until compliance with ACTIONS 3.1.3.1.d.3.c and 3.1.3.1.d.3.d below are demonstrated, and
 - b) The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined at least once per 12 hours, and
 - c) A power distribution map is obtained from the movable incore detectors and $F_Q(Z)$ and $F_{N\Delta H}$ are verified to be within their limits within 72 hours, and
 - d) A reevaluation of each accident analysis of Table 3.1-1 is performed within 5 days; this reevaluation shall confirm that the previously analyzed results of these accidents remain valid for the duration of operation under these conditions.

SURVEILLANCE REQUIREMENTS

4.1.3.1.1 The position of each full length rod shall be determined to be within the Allowed Rod Misalignment of the group step counter demand position at least once per 12 hours (allowing for one hour thermal soak after rod motion) except during time intervals when the Rod Position Deviation Monitor is inoperable, then verify the group positions at least once per 4 hours. ** Add* *** Add*

4.1.3.1.2 Each full length rod not fully inserted in the core shall be determined to be OPERABLE by movement of at least 10 steps in any one direction at least once per 92 days.

** See next page insert 1*

*** See next page insert 1*

INSERT 1 FOR PAGE 3/4 1-18

- * During Unit 4 Cycle 20, the position of Rod C-9 Shutdown Bank A will be determined every 8 hours by an alternate method other than the Analog Rod Position Indication system, until the repair of the indication system for this rod is completed.
- ** During Unit 4 Cycle 20, the position of rod C-9, Shutdown Bank A, may be monitored by alternate methods that will not provide an input into the Rod Position Deviation Monitor. The use of the alternate method for rod C-9 does not require the 4 hour comparison of demanded versus actual position per 4.1.3.1.1.

REACTIVITY CONTROL SYSTEMS

POSITION INDICATION SYSTEMS - OPERATING

LIMITING CONDITION FOR OPERATION (Continued)

3.1.3.2 The Analog Rod Position Indication System and the Demand Position Indication System shall be OPERABLE and capable of determining the respective actual and demanded shutdown and control rod positions as follows:

- a. Analog rod position indicators, ^{* add} within one hour after rod motion (allowance for thermal soak);

All Shutdown Banks: within the Allowed Rod Misalignment of Specification 3.1.3.1 of the group demand counters for withdrawal ranges of 0-30 steps and 200-All Rods Out as defined in the Core Operating Limits Report.

Control Bank A and B: within the Allowed Rod Misalignment of Specification 3.1.3.1 of the group demand counters for withdrawal ranges of 0-30 steps and 200-All Rods Out as defined in the Core Operating Limits Report.

Control Banks C and D: within the Allowed Rod Misalignment of Specification 3.1.3.1 of the group demand counters for withdrawal range of 0-All Rods Out as defined in the Core Operating Limits Report.

- b. Group demand counters; ± 2 steps.

APPLICABILITY: MODES 1 and 2.

ACTION:

- a. With a maximum of one analog rod position indicator ^{* add} per bank inoperable either:
1. Determine the position of the non-indicating rod(s) ^{* add} indirectly by the movable incore detectors at least once per 8 hours and within one hour after any motion of the non-indicating rod which exceeds 24 steps in one direction since the last determination of the rod's position, or
 2. Reduce THERMAL POWER to less than 75% of RATED THERMAL POWER within 8 hours.
- b. With a maximum of one demand position indicator per bank inoperable either:
1. Verify that all analog rod position indicators for the affected bank are OPERABLE and that the most withdrawn rod and the least withdrawn rod of the bank are within the Allowed Rod Misalignment of Specification 3.1.3.1 at least once per 8 hours, or
 2. Reduce THERMAL POWER to less than 75% of RATED THERMAL POWER within 8 hours.

^{add} ↓
* During Unit 4 Cycle 20, the position of Rod C-9 Shutdown Bank A will be determined every 8 hours by an alternate method other than the Analog Rod Position Indication system, until the repair of the indication system for this rod is completed.

REACTIVITY CONTROL SYSTEMS

SURVEILLANCE REQUIREMENTS

4.1.3.2.1 Each analog rod position indicator shall be determined to be OPERABLE by verifying that the Demand Position Indication System and the Analog Rod Position Indication System agree within the Allowed Rod Misalignment of Specification 3.1.3.1 (allowing for one hour thermal soak after rod motion) at least once per 4 hours except during time intervals when the Rod Position Deviation Monitor is inoperable, then compare the Demand Position Indication System and the Analog Rod Position Indication System at least once per 4 hours.

4.1.3.2.2 Each of the above required analog rod position indicator(s) shall be determined to be OPERABLE by performance of a CHANNEL CHECK, CHANNEL CALIBRATION and ANALOG CHANNEL OPERATIONAL TEST performed in accordance with Table 4.1-1.

Add ↘

- * During Unit 4 Cycle 20, the position of Rod C-9 Shutdown Bank A will be determined every 8 hours by an alternate method other than the Analog Rod Position Indication system, until the repair of the indication system for this rod is completed.
- ** During Unit 4 Cycle 20, the position of rod C-9, Shutdown Bank A, may be monitored by alternate methods that will not provide an input into the Rod Position Deviation Monitor. The use of the alternate method for rod C-9 does not require the 4 hour comparison of demanded versus actual position per 4.1.3.2.1.

REACTIVITY CONTROL SYSTEMS

SHUTDOWN ROD INSERTION LIMIT

LIMITING CONDITION FOR OPERATION

3.1.3.5 All shutdown rods shall be fully withdrawn.

APPLICABILITY: MODES 1* and 2* **

ACTION:

With a maximum of one shutdown rod not fully withdrawn, except for surveillance testing pursuant to Specification 4.1.3.1.2, within 1 hour either:

- a. Fully withdraw the rod, or
- b. Declare the rod to be inoperable and apply Specification 3.1.3.1.

SURVEILLANCE REQUIREMENTS

4.1.3.5 Each shutdown rod shall be determined to be fully withdrawn:

- a. Within 15 minutes prior to withdrawal of any rods in control banks A, B, C, or D during an approach to reactor criticality, and
- b. At least once per 12 hours thereafter.

add

*** During Unit 4 Cycle 20, the position of Rod C-9 Shutdown Bank A will be determined every 8 hours by an alternate method other than the Analog Rod Position Indication system, until the repair of the indication system for this rod is completed.

*See Special Test Exceptions Specifications 3.10.2 and 3.10.3.

**With K_{eff} greater than or equal to 1.0

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REACTIVITY CONTROL SYSTEMS

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

GROUP HEIGHT

LIMITING CONDITION FOR OPERATION

3.1.3.1 All full length (shutdown and control) rods shall be OPERABLE and positioned within the Allowed Rod Misalignment between the Analog Rod Position Indication ** and the group step counter demand position within one hour after rod motion. The Allowed Rod Misalignment shall be defined as:

- a. for THERMAL POWER less than or equal to 90% of RATED THERMAL POWER, the Allowed Rod Misalignment is ± 18 steps, and
- b. for THERMAL POWER greater than 90% of RATED THERMAL POWER, the Allowed Rod Misalignment is ± 12 steps.

APPLICABILITY: MODES 1* and 2*

ACTION:

- a. With one or more full length rods inoperable due to being immovable as a result of excessive friction or mechanical interference or known to be untrippable, determine that the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied within 1 hour and be in HOT STANDBY within 6 hours.
- b. With more than one full length rod inoperable or misaligned from the group step counter demand position by more than ± 12 steps and THERMAL POWER greater than 90% of RATED THERMAL POWER, within 1 hour either:
 1. Restore all indicated rod positions to within the Allowed Rod Misalignment, or
 2. Reduce THERMAL POWER to less than 90% of RATED THERMAL POWER and confirm that all indicated rod positions are within the Allowed Rod Misalignment, or
 3. Be in HOT STANDBY within the following 6 hours.
- c. With more than one full length rod inoperable or misaligned from the group step counter demand position by more than ± 18 steps and THERMAL POWER less than or equal to 90% of RATED THERMAL POWER, within 1 hour either:
 1. Restore all indicated rod positions to within the Allowed Rod Misalignment, or
 2. Be in HOT STANDBY within the following 6 hours.

*See Special Test Exceptions 3.10.2 and 3.10.3.

**During Unit 4 Cycle 20, the position of Rod C-9 Shutdown Bank A will be determined every 8 hours by an alternate method other than the Analog Rod Position Indication system, until the repair of the indication system for this rod is completed.

REACTIVITY CONTROL SYSTEMS
LIMITING CONDITION FOR OPERATION (Continued)

- d. With one full length rod inoperable due to causes other than addressed by ACTION a, above, or misaligned from its group step counter demand position by more than the Allowed Rod Misalignment of Specification 3.1.3.1, POWER OPERATION may continue provided that within one hour either:
1. The rod is restored to OPERABLE status within the Allowed Rod Misalignment of Specification 3.1.3.1, or
 2. The remainder of the rods in the bank with the inoperable rod are aligned to within the Allowed Rod Misalignment of Specification 3.1.3.1 of the inoperable rod while maintaining the rod sequence and insertion limits of Specification 3.1.3.6; the THERMAL POWER level shall be restricted pursuant to Specification 3.1.3.6 during subsequent operation, or
 3. The rod is declared inoperable and the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied. POWER OPERATION may then continue provided that:
 - a) The THERMAL POWER level is reduced to less than or equal to 75% of RATED THERMAL POWER within one hour and within the next 4 hours the power range neutron flux high trip setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER. THERMAL POWER shall be maintained less than or equal to 75% of RATED THERMAL POWER until compliance with ACTIONS 3.1.3.1.d.3.c and 3.1.3.1.d.3.d below are demonstrated, and
 - b) The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined at least once per 12 hours, and
 - c) A power distribution map is obtained from the movable incore detectors and $F_Q(Z)$ and $F_{\Delta H}^N$ are verified to be within their limits within 72 hours, and
 - d) A reevaluation of each accident analysis of Table 3.1-1 is performed within 5 days; this reevaluation shall confirm that the previously analyzed results of these accidents remain valid for the duration of operation under these conditions.

SURVEILLANCE REQUIREMENTS

4.1.3.1.1 The position Δ of each full length rod shall be determined to be within the Allowed Rod Misalignment of the group step counter demand position at least once per 12 hours (allowing for one hour thermal soak after rod motion) except during time intervals when the Rod Position Deviation Monitor is inoperable, then verify the group positions at least once per 4 hours. **

4.1.3.1.2 Each full length rod not fully inserted in the core shall be determined to be OPERABLE by movement of at least 10 steps in any one direction at least once per 92 days.

* During Unit 4 Cycle 20, the position of Rod C-9 Shutdown Bank A will be determined every 8 hours by an alternate method other than the Analog Rod Position Indication system, until the repair of the indication system for this rod is completed.

** During Unit 4 Cycle 20, the position of rod C-9, Shutdown Bank A, may be monitored by alternate methods that will not provide an input into the Rod Position Deviation Monitor. The use of the alternate method for rod C-9 does not require the 4 hour comparison of demanded versus actual position per 4.1.3.1.1.

REACTIVITY CONTROL SYSTEMS

POSITION INDICATION SYSTEMS - OPERATING

LIMITING CONDITION FOR OPERATION (Continued)

3.1.3.2 The Analog Rod Position Indication System * and the Demand Position Indication System shall be OPERABLE and capable of determining the respective actual and demanded shutdown and control rod positions as follows:

- a. Analog rod position indicators *, within one hour after rod motion (allowance for thermal soak);

All Shutdown Banks: within the Allowed Rod Misalignment of Specification 3.1.3.1 of the group demand counters for withdrawal ranges of 0-30 steps and 200-All Rods Out as defined in the Core Operating Limits Report.

Control Bank A and B: within the Allowed Rod Misalignment of Specification 3.1.3.1 of the group demand counters for withdrawal ranges of 0-30 steps and 200-All Rods Out as defined in the Core Operating Limits Report.

Control Banks C and D: within the Allowed Rod Misalignment of Specification 3.1.3.1 of the group demand counters for withdrawal range of 0-All Rods Out as defined in the Core Operating Limits Report.
- b. Group demand counters; ± 2 steps.

APPLICABILITY: MODES 1 and 2.

ACTION:

- a. With a maximum of one analog rod position indicator * per bank inoperable either:
 1. Determine the position of the non-indicating rod(s) * indirectly by the movable incore detectors at least once per 8 hours and within one hour after any motion of the non-indicating rod which exceeds 24 steps in one direction since the last determination of the rod's position, or
 2. Reduce THERMAL POWER to less than 75% of RATED THERMAL POWER within 8 hours.
- b. With a maximum of one demand position indicator per bank inoperable either:
 1. Verify that all analog rod position indicators for the affected bank are OPERABLE and that the most withdrawn rod and the least withdrawn rod of the bank are within the Allowed Rod Misalignment of Specification 3.1.3.1 at least once per 8 hours, or
 2. Reduce THERMAL POWER to less than 75% of RATED THERMAL POWER within 8 hours.

* During Unit 4 Cycle 20, the position of Rod C-9 Shutdown Bank A will be determined every 8 hours by an alternate method other than the Analog Rod Position Indication system, until the repair of the indication system for this rod is completed.

REACTIVITY CONTROL SYSTEMS

SURVEILLANCE REQUIREMENTS

4.1.3.2.1 Each analog rod position indicator * shall be determined to be OPERABLE by verifying that the Demand Position Indication System and the Analog Rod Position Indication System * agree within the Allowed Rod Misalignment of Specification 3.1.3.1 (allowing for one hour thermal soak after rod motion) at least once per 12 hours except during time intervals when the Rod Position Deviation Monitor ** is inoperable, then compare the Demand Position Indication System and the Analog Rod Position Indication System at least once per 4 hours.

4.1.3.2.2 Each of the above required analog rod position indicator(s) * shall be determined to be OPERABLE by performance of a CHANNEL CHECK, CHANNEL CALIBRATION and ANALOG CHANNEL OPERATIONAL TEST performed in accordance with Table 4.1-1.

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- * During Unit 4 Cycle 20, the position of Rod C-9 Shutdown Bank A will be determined every 8 hours by an alternate method other than the Analog Rod Position Indication system, until the repair of the indication system for this rod is completed.
 - ** During Unit 4 Cycle 20, the position of rod C-9, Shutdown Bank A, may be monitored by alternate methods that will not provide an input into the Rod Position Deviation Monitor. The use of the alternate method for rod C-9 does not require the 4 hour comparison of demanded versus actual position per 4.1.3.2.1.

REACTIVITY CONTROL SYSTEMS

SHUTDOWN ROD INSERTION LIMIT

LIMITING CONDITION FOR OPERATION

3.1.3.5 All shutdown rods shall be fully withdrawn.

APPLICABILITY: MODES 1* and 2* **

ACTION:

With a maximum of one shutdown rod not fully withdrawn, except for surveillance testing pursuant to Specification 4.1.3.1.2, within 1 hour either:

- a. Fully withdraw the rod, or
- b. Declare the rod to be inoperable and apply Specification 3.1.3.1.

SURVEILLANCE REQUIREMENTS

4.1.3.5 Each shutdown rod *** shall be determined to be fully withdrawn:

- a. Within 15 minutes prior to withdrawal of any rods in control banks A, B, C, or D during an approach to reactor criticality, and
- b. At least once per 12 hours thereafter.

*See Special Test Exceptions Specifications 3.10.2 and 3.10.3.

**With K_{eff} greater than or equal to 1.0

*** During Unit 4 Cycle 20, the position of Rod C-9 Shutdown Bank A will be determined every 8 hours by an alternate method other than the Analog Rod Position Indication system, until the repair of the indication system for this rod is completed.