Southern Nuclear

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10 CFR 50.90

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

Southern Nuclear Operating Company
Vogtle Electric Generating Plant Units 3 and 4
Request for License Amendment:
Fuel Management Related Technical Specifications (LAR-18-005)

Ladies and Gentlemen:

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC), the licensee for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, requests an amendment to Combined License Numbers NPF-91 and NPF-92, for VEGP Units 3 and 4, respectively. The requested amendment includes changes to COL Appendix A, Technical Specifications (TS) related to fuel management. Because the proposed changes impact the Technical Specifications, this activity has been determined to require prior NRC approval.

Enclosure 1 provides the description, technical evaluation, regulatory evaluation (including the Significant Hazards Consideration Determination), and environmental considerations for the proposed changes.

Enclosure 2 provides the proposed changes to the licensing basis documents.

Enclosure 3 provides conforming Technical Specification Bases changes for information only.

This letter contains no regulatory commitments. This letter has been reviewed and confirmed to not contain security-related information.

SNC requests NRC staff review and approval of the license amendment request (LAR) no later than August 30, 2018. Approval by this date will allow sufficient time to implement licensing basis changes necessary to support procedure development in relation to conducting the necessary operator training to support plant operations. SNC expects to implement the proposed amendment within thirty days of approval of the LAR.

In accordance with 10 CFR 50.91, SNC is notifying the State of Georgia of this LAR by transmitting a copy of this letter and enclosures to the designated State Official.

Should you have any questions, please contact Mr. Wesley Sparkman at (205) 992-5061.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 31st of January 2018.

Respectfully submitted,

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Southern Nuclear Operating Company

Enclosures: 1) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Request for License Amendment: Fuel Management Related Technical Specifications (LAR-18-005)

2) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Proposed Changes to the Licensing Basis Documents (LAR-18-005)

3) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Conforming Technical Specification Bases Changes (LAR-18-005) (For Information Only)

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Southern Nuclear Operating Company

ND-18-0067

Enclosure 1

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Request for License Amendment:

Fuel Management Related Technical Specifications

(LAR-18-005)

(Enclosure 1 consists of 16 pages, including this cover page)

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Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC, or the "Licensee") hereby requests an amendment to Combined License (COL) Nos. NPF-91 and NPF-92 for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, respectively.

1. SUMMARY DESCRIPTION

The requested amendment proposes changes to COL Appendix A, Technical Specifications (TS) related to fuel management. Specifically, the requested amendment proposes changes to:

A. Revise TS 3.1.7, Rod Position Indication, to clarify the actions to be taken in the event rod position indication is not OPERABLE. A note is proposed to be added to Surveillance Requirement (SR) 3.1.7.1 which will not be required for rods determined to not meet Limiting Condition for Operation (LCO) 3.1.4. Additional consistency updates are proposed. A corollary note is being added to SR 3.1.4.1 stating that the SR is not required to be performed for a rod associated with inoperable Digital Rod Position Indication (DRPI) or demand position indication.

B. Revise TS 1.1, Definitions, and SR 3.1.4.3, Rod Group Alignment Limits, to extend applicability to both stationary and movable gripper coils.

C. Revise SR 3.2.4.1, Quadrant Power Tilt Ratio Verification, and TS 3.2.3 LCO Note 4 to refer to the power range channel by its full name "Power Range Neutron Flux channel."

D. Revise TS 4.2.2, Design Features – Control Rod and Gray Rod Assemblies, to clarify that Gray Rod Cluster Assemblies (GRCAs) in conjunction with Rod Cluster Control Assemblies (RCCAs) are used to augment mechanical shim in both normal and load follow operations.

This enclosure requests approval of the license amendment necessary to implement these changes.

2 & 3. DETAILED DESCRIPTION and TECHNICAL EVALUATION

Reviews by site operations personnel and reactor engineering and observations made during training of operations personnel have identified improvements to the TS, which are proposed in the License Amendment request.

A. <u>TS 3.1.7, Rod Position Indication</u>

Background

As identified in Updated Final Safety Analysis Report (UFSAR) Subsection 7.7.1.3, the DRPI System measures the position of each control rod assembly using a detector consisting of discrete coils mounted concentric with the rod drive pressure housing. The coils are located axially along the pressure housing and magnetically sense the entry and presence of the rod drive shaft through its center line.

The purpose of TS LCO 3.1.7 is to support OPERABILITY of the DRPI to determine control rod positions and assess compliance with the control rod alignment and insertion limits. The Conditions associated with this LCO relate to situations where one or more DRPI(s) or demand position indication(s) is(are) inoperable. Should one or multiple DRPI(s) be

inoperable, TS 3.1.7 Actions provide Required Actions (RAs) for alternate rod position monitoring or power reduction.

As described in TS Bases 3.1.4, Rod Group Alignment Limits, the DRPI provides a highly accurate indication of actual control rod position, at a lower precision than the step counters. This system is based on inductive analog signals from a series of coils spaced along a hollow tube. To increase the reliability of the system, inductive coils are connected alternately to the A or B coil stacks. Thus, if one data cabinet fails, DRPI will go on half-accuracy. The DRPI are capable of monitoring rod position within at least ±12 steps with either full accuracy or half accuracy; thus, the DRPI at half accuracy provides the necessary rod position information.

The current language in TS 3.1.7 does not appropriately reflect that the DRPI functioning at half accuracy provides the necessary rod position information and is considered to be OPERABLE. The current language contains misleading statements which do not align with a DRPI at half accuracy being considered OPERABLE. The proposed TS and Bases changes clarify the DRPI OPERABILITY with respect to the half accuracy condition. In addition, TS 3.1.7 uses the phrase “position indicators” which can be misinterpreted as a single coil. The proposed revisions to the TS refer to the DRPI being OPERABLE or restoring OPERABILITY to the DRPI.

TS 3.1.7 also contains SR 3.1.7.1 which verifies DRPI agreement with the demand position indication within ±12 steps to provide assurance that the DRPI is operating correctly. This surveillance is performed prior to reactor criticality after each removal of the reactor head, as there is the potential for unnecessary plant transients if the SR were performed with the reactor at power.

Proposed Licensing Basis Changes for TS 3.1.7

- Revise the LCO Statement to replace the word “System” following “Digital Rod Position Indication (DRPI)” and “Bank Demand Position Indication” with “for each control rod” and “for each group” respectively.
- Revise Action note to replace “rod position indicator” with “DRPI” and change “demand position indicator” to “demand position indication.”
- Revise Condition A to replace “for” with “in.”
- Revise RA A.1 to replace “position indicators” with “DRPI indirectly” and “On Line Power Distribution Monitoring System (OPDMS)” with “incore detectors.”
- Revise Condition B to add “in one or more groups” after “inoperable.”
- Delete the Condition B Action to verify the position of the rods with inoperable position indication indirectly (change is consistent with TSTF-547).
- Revise the Condition B Action to restore inoperable position indicators to OPERABLE status by replacing “position indicators” with “DRPI(s)” (change is consistent with TSTF-547).
- Revise Condition C to replace “position indicators” with “DRPI.”

- Revise RA C.1 to replace “position indicators” with “DRPI indirectly” and “OPDMS” with “incore detectors.”
- Revise Condition D to add “or more” after “One” and replace “for” with “in” and change “demand position indicator” to “demand position indication.”
- Revise SR 3.1.7.1 to add a note, reading, “Not required to be met for DRPI associated with a rod that does not meet LCO 3.1.4, Rod Alignment Limits.”
- Revise SR 3.1.4.1 with a corollary note, reading “Not required to be performed for rods associated with inoperable DRPI or demand position indication.”

Conforming Bases revisions are provided for information. The TS Bases changes will be incorporated following NRC approval of the amendment request in accordance with TS 5.5.6, Technical Specification Bases Control Program.

Technical Justification

The purpose of TS LCO 3.1.7 is to support OPERABILITY of the DRPI to determine control rod positions and assess compliance with the control rod alignment and insertion limits. Should one or multiple DRPI(s) be inoperable, TS 3.1.7 Actions provide RAs for alternate rod position monitoring or power reduction. The proposed TS changes clarify the DRPI half accuracy condition is considered OPERABLE consistent with the capability of the DRPI to provide the necessary rod position information. In addition, the proposed revisions to the TS refer to the DRPI being OPERABLE or restoring OPERABILITY to the DRPI.

The proposed revision to the LCO Statement, eliminates potential confusion related to the requirements of the LCO. The revised LCO statement clarifies that the OPERABILITY requirement applies to the DRPI for each control rod and the Bank Demand Position Indication for each group, rather than the DRPI and Bank Demand Position Indication Systems. As previously noted, the Conditions associated with this LCO relate to operability of one or more DRPI(s) or demand position indicator(s). TS Bases 3.1.7 also state that position indication information for rods is needed to assess compliance with the control rod alignment and insertion limits.

The proposed revision to TS 3.1.7 RAs A.1 and C.1 requires use of incore detectors to verify rod position when one or more DRPI(s) per group is(are) inoperable. The incore instrument system (IIS) is required to be capable of performing required online core monitoring, including the incore detectors. As described in UFSAR subsection 4.4.6.1, during plant operation, the incore instrument thimble assembly (including the incore detectors) is positioned within the fuel assembly and transmits, processes, and displays the results of the power monitoring in the main control room. The revisions to TS 3.1.7 require verification of the position of the rods using incore detectors (and, ultimately the IIS) when one or a group of DRPI(s) is(are) inoperable. This approach allows the operators to monitor rod position in the core with greater accuracy.

The proposed revision uses incore detectors to verify rod position when a DRPI is inoperable using incore data and offline core calculational tools. OPDMS relies on operator input or the DRPI to determine rod position, so an inoperable DRPI should not be verified by OPDMS. This approach allows for the use of other tools to accurately determine rod position when DRPI is inoperable.

The proposed revisions to TS 3.1.7 Actions note, Condition C, RAs A.1, Condition B action to restore inoperable position indicators to OPERABLE, and C.1 are made to consistently use the defined abbreviation “DRPI.” Utilizing the terminology “DRPI,” rather than “rod position indicator” or “position indicator,” clarifies that it is the DRPI which is required to be OPERABLE, not a single coil. To increase the reliability of the indication, the inductive coils are connected alternately to the A or B coil stacks. Thus, if one data cabinet fails, the DRPI system will indicate rod position with half accuracy. Each DRPI is still considered OPERABLE when functioning at half accuracy as it can maintain the required ±12 step accuracy.

With an accuracy of ±12 steps, TS LCO 3.1.7 requires a deviation of less than the allowable limit given in TS LCO 3.1.4, Rod Alignment Limits, in position indication for a single control rod. This provides high confidence that the position uncertainty in the corresponding control rod group is within the assumed values used in the analysis (that specified control rod group insertion limits). These requirements provide adequate assurance that control rod position indication during power operation and PHYSICS TESTS is accurate, and that design assumptions are not challenged. OPERABILITY of the position indicator channels is necessary to detect inoperable, misaligned, or mispositioned control rods.

The word “indicator” is changed to “indication” in the Actions table note and in Condition D with respect to demand position. This change is consistent with the wording used in the TS 3.1.7 LCO Statement. The change also emphasizes that the OPERABILITY requirement applies to the position indication information provided by the step counters to the operators.

A Note is being added to SR 3.1.7.1 stating that this SR is not required to be performed for rods that are known not to meet LCO 3.1.4. If a rod is known not to be within ±12 steps of the group demand position, TS 3.1.4 provides the appropriate RAs. For continued operation with a misaligned rod, Condition B requires (1) verification of shutdown margin (SDM) or boration until SDM is met; (2) a reduction in Rated Thermal Power (RTP); (3) periodic verification that SDM remains within limits; (4) verification that hot channel factors are within limits, and (5) re-evaluation of the safety analyses to confirm continued operation is permissible. With more than one rod misaligned, TS 3.1.4 Condition D requires (1) the SDM must be verified within limits or boration initiated to restore required SDM, and (2) the plant must be placed in MODE 3.

A note is being added to SR 3.1.4.1 stating that this SR is not required to be performed for rods associated with an inoperable DRPI or demand position indication. The alignment limit is based on the position indication. If the position indication is inoperable, the SR cannot be performed. The addition of these notes to SR 3.1.4.1 and 3.1.7.1 does not make a modification, addition to, or removal of an SSC such that a design function as described in the UFSAR is adversely affected.

TS 3.1.7, Conditions A and B, are proposed to be revised from “for one or more groups” to the more standard terminology “in one or more groups.” Condition D, is revised from “One demand position indicator per bank inoperable for one or more banks” to “One or more demand position indicators per bank inoperable in one or more banks.” The LCO 3.1.7 ACTIONS table is modified by a Note indicating that a separate Condition entry is allowed for each inoperable rod position indicator per group and each demand position indicator per bank. The separate condition entry Note modifying the TS 3.1.7 Actions states that separate condition entry is allowed for inoperable demand position indicators which means that Condition D is applicable to more than one inoperable demand position indicator per bank.

The proposed change makes the terminology consistent with the Note modifying the RAs. This change does not make a modification to, addition to, or removal of an SSC such that a design function as described in the UFSAR is adversely affected.

With the proposed revision to TS 3.1.7 RA A.1, the Condition B Action to verify the position of rods with inoperable position indication indirectly is now redundant and is proposed to be deleted. Condition A applies when one DRPI per group is inoperable and Condition B applies when more than one DRPI per group is inoperable. Each entry into Condition B also requires entry into Condition A. Restating the RA is not necessary. This change does not make a modification to, addition to, or removal of an SSC such that a design function as described in the UFSAR is adversely affected.

The proposed changes do not adversely impact any functions associated with containing, controlling, channeling, monitoring, or processing radioactive or non-radioactive materials, nor do they diminish the functionality of any design or operational features that are credited with controlling the release of effluents during plant operation. The types and quantities of expected plant effluents are not changed. No effluent release path is impacted by this change. Therefore, neither radioactive nor non-radioactive material effluents are affected by this activity.

The proposed changes do not adversely impact radiologically controlled zones. Plant radiation zones, radiation controls established to satisfy 10 CFR Part 20 requirements, and expected amounts and types of radioactive materials are not affected by the proposed changes. Therefore, individual and cumulative radiation exposures are not significantly affected by this change.

The proposed changes do not adversely impact the emergency plan or the physical security plan implementation, because there are no changes to physical access to credited equipment inside the Nuclear Island (including containment or the auxiliary building) and no adverse impact to plant personnel's ability to respond to any plant operations or security event.

B. Control Rod Drive Mechanism (CRDM) Gripper Coils

Background

As identified in UFSAR Subsection 7.2.1, reactor shutdown occurs when electrical power is removed from the rod drive mechanism coils, allowing the rods to fall by gravity into the reactor core. As noted in UFSAR subsection 3.9.4.1.1, the coil stack assembly includes the coil housings, electrical conduit and connector, and three operating coils: the stationary gripper coil, the movable gripper coil, and the lift coil. The coil stack assembly is a separate unit. It is installed on the drive mechanism by sliding it over the outside of the latch housing. It rests on the base of the latch housing without mechanical attachment. Energizing the operating coils causes movement of the pole pieces and latches in the latch assembly.

The CRDM gripper coils function is to supply voltage to the CRDM gripper assemblies. Upon loss of power to the gripper coil, the engaged grippers will open allowing the associated rod to drop. When released from the control rod drive mechanism, the drive rod and rod cluster control assembly (RCCA) or gray rod cluster assembly (GRCA) fall by gravity into a fully inserted position.

The CRDM for both the RCCAs and the GRCAs are identical. Although the GRCAs are designed to drop during a trip insertion, the insertion of these assemblies is not required in order to shut down the reactor. The primary functions of the control rod drive mechanism is to insert or withdraw, at a designated speed, 53 RCCAs and 16 GRCAs from the core to control average core temperature. During startup and shutdown, the control assemblies control changes in reactivity.

Proposed Licensing Basis Changes for CRDM Gripper Coils

- Revise TS 1.1, definition of Reactor Trip System (RTS) Response Time, to remove "stationary" from "stationary gripper coil" and pluralize "coil" to "coils."
- Revise SR 3.1.4.3 to remove "stationary" from "stationary gripper coil voltage."

Technical Justification

The proposed revision clarifies TS 1.1, definition of Reactor Trip System (RTS) Response Time, and SR 3.1.4.3 by striking the phrase "stationary" from "stationary gripper coil." These Technical Specification sections apply to both the stationary and the movable gripper coils since both types of coils will be engaged and holding the rod when the rod is not moving. This is consistent with subsection 3.9.4.1.4 of the UFSAR "Holding and Tripping of Control Rods." Subsection 3.9.4.1.4 states, in holding mode both the stationary gripper coil and movable gripper coil are energized and engaged to hold the drive rod assembly. It further describes that when power to the stationary and movable gripper coils is cut off, the combined weight of the drive rod assembly and the RCCA or GRCA move the latches out of the drive rod assembly groove resulting in the rod falling by gravity into the core until the rod is fully inserted. As such, the definition's use of the word "stationary" was limiting and incomplete.

The practical impact of the revision to SR 3.1.4.3 is the initiation time has been clarified as the decay of gripper coil voltage, which includes both stationary and movable gripper coils. During rod drop time testing, these times are identical as they are measured from the tripping of the reactor trip breaker and both gripper coils must be open (de-energized) for the rods to drop. Verification of rod drop times allows the operator to confirm this time is bounded by the rod drop time assumed in the safety analysis. This revision has no impact on the determined maximum rod drop time.

The proposed changes do not adversely impact any functions associated with containing, controlling, channeling, monitoring, or processing radioactive or non-radioactive materials, nor do they diminish the functionality of any design or operational features that are credited with controlling the release of effluents during plant operation. The types and quantities of expected plant effluents are not changed. No effluent release path is impacted by this change. Therefore, neither radioactive nor non-radioactive material effluents are affected by this activity.

The proposed changes do not adversely impact radiologically controlled zones. Plant radiation zones, radiation controls established to satisfy 10 CFR Part 20 requirements, and expected amounts and types of radioactive materials are not affected by the proposed changes. Therefore, individual and cumulative radiation exposures are not significantly affected by this change.

The proposed changes do not adversely impact the emergency plan or the physical security plan implementation, because there are no changes to physical access to credited equipment inside the Nuclear Island (including containment or the auxiliary building) and no adverse impact to plant personnel's ability to respond to any plant operations or security event.

C. Power Range Neutron Flux Channels

Background

As identified in UFSAR Subsection 7.1.2.7.2, the Nuclear Instrumentation Detectors are used to monitor the leakage neutron flux. The lowest range (source range) covers six decades of leakage neutron flux. The lowest observed count rate depends on the strength of the neutron sources in the core and the core multiplication associated with the shutdown reactivity. The next range (intermediate range) covers eight decades. Detectors and instrumentation are chosen to provide overlap between the higher portion of the source range and the lower portion of the intermediate range. The instrumentation used at power is the power range, which covers approximately two decades of the total instrumentation range. This is a linear range that overlaps the at power portion of the intermediate range. These instruments work together as input for various reactor trip logics.

SR 3.2.4.1 verifies that the Quadrant Power Tilt Ratio (QPTR) is within its limit by calculation. The QPTR limit confirms that the gross radial power distribution remains consistent with the design values used in the safety analysis. More specifically, SR 3.2.4.1 note 1 allows for the QPTR to be calculated with three Power Range Neutron Flux channels instead of four if THERMAL POWER is < 75% RTP and the input from one Power Range Neutron Flux channel is inoperable.

The purpose of LCO 3.2.3 is to establish limits on the values of the Axial Flux Difference (AFD) in order to limit the amount of axial power distribution skewing to either the top or bottom of the core when the OPDMS is not monitoring parameters. By limiting the amount of power distribution skewing, core peaking factors are consistent with the assumptions used in the safety analyses. Limiting power distribution skewing over time also minimizes the xenon distribution skewing which is a significant factor in axial power distribution control. For surveillance of the power range channels performed according to SR 3.3.1.5, Note 4 allows deviation outside the target band for 16 hours without penalty since AFD deviation is required for doing the NIS calibration with the incore detector system.

Proposed Licensing Basis Changes for Power Range Neutron Flux Channels

- Revise channel name "power range channel" to "Power Range Neutron Flux channel" in TS 3.2.3, LCO note 4.
- Revise channel name "power range channel" to "Power Range Neutron Flux channel" in SR 3.2.4.1 note 1.

Conforming Bases revisions are provided for information. The TS Bases changes will be incorporated following NRC approval of the amendment request in accordance with TS 5.5.6, Technical Specification Bases Control Program.

Technical Justification

Addition of the words “Neutron Flux” is for name clarification only and poses no technical change to the surveillance. Capitalization of Power Range is an editorial change as well. This is consistent with the note in SR 3.2.4.2.

The proposed changes do not adversely impact any functions associated with containing, controlling, channeling, monitoring, or processing radioactive or non-radioactive materials, nor do they diminish the functionality of any design or operational features that are credited with controlling the release of effluents during plant operation. The types and quantities of expected plant effluents are not changed. No effluent release path is impacted by this change. Therefore, neither radioactive nor non-radioactive material effluents are affected by this activity.

The proposed changes do not adversely impact radiologically controlled zones. Plant radiation zones, radiation controls established to satisfy 10 CFR Part 20 requirements, and expected amounts and types of radioactive materials are not affected by the proposed changes. Therefore, individual and cumulative radiation exposures are not significantly affected by this change.

The proposed changes do not adversely impact the emergency plan or the physical security plan implementation, because there are no changes to physical access to credited equipment inside the Nuclear Island (including containment or the auxiliary building) and no adverse impact to plant personnel’s ability to respond to any plant operations or security event.

D. Mechanical Shim Augmentation

Background

TS 4.2.2 describes the design feature associated with the Rod Cluster Control Assemblies (RCCAs) and Gray Rod Cluster Assemblies (GRCAs). Specifically, it discusses how the GRCAs, in conjunction with RCCAs, are capable of augmenting mechanical shim (MSHIM) operation. MSHIM, as described in UFSAR subsection 4.3.2.4.16, is the use of mechanical means to control reactivity and power distribution simultaneously. MSHIM operation uses the MA, MB, MC, MD, M1 and M2 control banks to maintain the programmed coolant average temperature throughout the operating power range. This action of mechanical reactivity control can be augmented by periodic exchange of GRCA or RCCA insertion in both load follow and base load operations. The current language of TS 4.2.2 implies that the GRCAs and RCCAs capability of augmenting MSHIM is limited to load follow operation.

The proposed revision of removing the phrase “load follow” from TS 4.2.2 paragraph 2 is a necessary clarification to indicate that MSHIM is designed to utilize GRCAs in both load follow and steady state operation. The original statement did not describe all modes of operation.

Proposed Licensing Basis Changes for Mechanical Shim Augmentation

- Revise TS 4.2.2. paragraph 2 to remove the phrase “load follow.”

Technical Justification

As stated in the NRC Safety Evaluation Report (SER) (ML12193A278) "Westinghouse Electric Company's Final Topical Report Safety Evaluation For WCAP-16943, 'Enhanced Gray Rod Cluster Assembly Rodlet Design,'" Section 2.1, the GRCAs are automatically repositioned during both base load and load follow operation. The proposed changes are consistent with UFSAR subsections 4.1, 4.2.2.3.2, and 4.3.2.4.14. The proposed change aligns the modes of operation described in the TS to the modes of operation described in the approved WCAP as referenced in the above UFSAR discussions. The conditions and limitations identified in the NRC safety evaluation report for use of this WCAP are not directly pertinent to this change.

The proposed changes do not adversely impact any functions associated with containing, controlling, channeling, monitoring, or processing radioactive or non-radioactive materials, nor do they diminish the functionality of any design or operational features that are credited with controlling the release of effluents during plant operation. The types and quantities of expected plant effluents are not changed. No effluent release path is impacted by this change. Therefore, neither radioactive nor non-radioactive material effluents are affected by this activity.

The proposed changes do not adversely impact radiologically controlled zones. Plant radiation zones, radiation controls established to satisfy 10 CFR Part 20 requirements, and expected amounts and types of radioactive materials are not affected by the proposed changes. Therefore, individual and cumulative radiation exposures are not significantly affected by this change.

The proposed changes do not adversely impact the emergency plan or the physical security plan implementation, because there are no changes to physical access to credited equipment inside the Nuclear Island (including containment or the auxiliary building) and no adverse impact to plant personnel's ability to respond to any plant operations or security event.

4. REGULATORY EVALUATION

4.1 Significant Hazards Consideration

The requested amendment proposes associated changes to Combined License (COL) Appendix A, Technical Specifications (TS) related to fuel management. Specifically, the requested amendment proposes changes to:

A. Clarify correct actions to be taken in the event a Digital Rod Position Indication (DRPI) is not OPERABLE (TS 3.1.4 and TS 3.1.7).

B. Clarify the relationship between Control Rod Gripper Coils and Reactor Trip (TS 1.1 and TS 3.1.4).

C. Update instrument channel names for Quadrant Power Tilt Ratio verification (TS 3.2.3 and TS 3.2.4).

D. Clarify interaction between Control Rods, Gray Rods and mechanical shim (TS 4.2.2).

An evaluation to determine whether or not a significant hazards consideration is involved with the proposed amendment was completed by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

4.1.1 Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed changes are to clarify proper operation and methodology associated with the DRPI, Control Rod Gripper Coils, instrumentation associated with Quadrant Power Tilt Ratio, or Control or Gray Rods. These changes do not affect the operation of this equipment and have no adverse impact on their design functions.

The changes do not involve an interface with any structure, system, or component (SSC) accident initiator or initiating sequence of events, and thus, the probabilities of the accidents evaluated in the plant-specific Updated Final Safety Analysis Report (UFSAR) are not affected. The proposed changes do not adversely affect any mitigation sequence or the predicted radiological releases due to postulated accident conditions, thus, the consequences of the accidents evaluated in the UFSAR are not affected.

Therefore, the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

4.1.2 Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed changes verify and maintain the capabilities of the DRPI, Control Rod Gripper Coils, instrumentation associated with Quadrant Power Tilt Ratio, and Control and Gray Rods to perform their design functions. The proposed changes do not affect the operation of any systems or equipment that may initiate a new or different kind of accident, or alter any SSC such that a new accident initiator or initiating sequence of events is created.

The proposed changes do not affect any other SSC design functions or methods of operation in a manner that results in a new failure mode, malfunction, or sequence of events that affect safety-related or nonsafety related equipment. Therefore, this activity does not allow for a new fission product release path, result in a new fission product barrier failure mode, or create a new sequence of events that result in significant fuel cladding failures. These changes are to clarify proper operation and methodology associated with this equipment and have no adverse impact on their design functions.

Therefore, the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

4.1.3 Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No

The proposed changes do not affect existing safety margins. The proposed changes verify and maintain the capabilities of the DRPI, Control Rod Gripper Coils, instrumentation associated with Quadrant Power Tilt Ratio, and Control and Gray Rods to perform their design functions. Therefore, the proposed changes satisfy the same design functions in accordance with the same codes and standards as stated in the UFSAR. These changes do not affect any design code, function, design analysis, safety analysis input or result, or design/safety margin.

The proposed changes would not affect any safety-related design code, function, design analysis, safety analysis input or result, or existing design/safety margin. Because no safety analysis or design basis acceptance limit/criterion is challenged or exceeded by the requested changes, no margin of safety is significantly reduced.

Therefore, the proposed amendment does not involve a significant reduction in a margin of safety.

Based on the above, it is concluded that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of “no significant hazards consideration” is justified.

4.2 Applicable Regulatory Requirements/Criteria

10 CFR 52.98(c) requires NRC approval for any modification to, addition to, or deletion from the terms and conditions of a Combined License (COL). This activity involves a change to COL Appendix A, Technical Specifications; therefore, this activity requires a proposed amendment to the COL. Accordingly, NRC approval is required prior to making the plant-specific changes in this license amendment request.

10 CFR 52, Appendix D, Section VIII.C.6 states that after issuance of a license, “Changes to the plant-specific TS (Technical Specifications) will be treated as license amendments under 10 CFR 50.90.” 10 CFR 50.90 addresses the application for amendments of licenses, construction permits, and early site permits. As discussed above, a change to COL Appendix A is requested, and thus a license amendment request (LAR) (as supplied herein) is required.

10 CFR 50, Appendix A, “General Design Criteria for Nuclear Power Plants” General Design Criterion (GDC) 10 - *Reactor design*. The reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences. The proposed change provides clarification regarding the Reactor Trip System interaction with the control rod drive mechanism. Additionally, the proposed change revises the methodology by which rod position is verified if a DRPI is declared inoperable. The

proposed amendment does not adversely affect the margin associated with the reactor design.

10 CFR 50, Appendix A, GDC 13 – *Instrumentation and Control*, requires instrumentation to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems. Appropriate controls shall be provided to maintain these variables and systems within prescribed operating ranges. The proposed amendment does not involve a design change to the PMS. None of the GDC compliance discussions for the PMS in UFSAR Subsection 3.1.1 are affected.

10 CFR 50, Appendix A, GDC 27 – *Combined reactivity control systems capability.* The reactivity control systems shall be designed to have a combined capability, in conjunction with poison addition by the emergency core cooling system, of reliably controlling reactivity changes to assure that under postulated accident conditions and with appropriate margin for stuck rods the capability to cool the core is maintained. The proposed changes do not modify the reactivity control systems capability but rather clarifies which Control Rod Drive mechanism coils are involved in rod drop initiation.

10 CFR 50, Appendix A, GDC 28 – *Reactivity limits*, The reactivity control systems shall be designed with appropriate limits on the potential amount and rate of reactivity increase to assure that the effects of postulated reactivity accidents can neither (1) result in damage to the reactor coolant pressure boundary greater than limited local yielding nor (2) sufficiently disturb the core, its support structures or other reactor pressure vessel internals to impair significantly the capability to cool the core. The proposed changes clarify methodology by which reactivity limits are monitored but do not challenge reactivity limits.

The proposed changes have been evaluated to determine whether applicable regulations continue to be met. It was determined that the proposed changes do not affect conformance with the General Design Criteria (GDC) differently than described in the plant-specific DCD or UFSAR.

4.3 Precedent

There are no identified precedents for the changes in this request.

4.4 Conclusions

Based on the considerations discussed above, (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 inimical to the common defense and security or to the health and safety of the public. Therefore, it is concluded that the requested amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5. ENVIRONMENTAL CONSIDERATIONS

Details of the proposed changes are provided in combined Sections 2 and 3 of this license amendment request. This review supports a request to amend the Combined License (COL) to allow a departure from the plant-specific Technical Specifications (TS) incorporated into the license.

This review supports a request to amend the Combined License (COL) to allow changes to the plant-specific Technical Specifications (TS). The proposed amendment specifies the information required to modify TS 3.1.7 to utilize incore detectors as the indirect rod position verification method as well as revisions for clarifications and eliminating redundancies, clarification regarding the Reactor Trip System (RTS) interfacing with the Control Rod Drive Mechanism (CRDM) coils in TS 1.1 and SR 3.1.4.3, editorial revisions for a LCO 3.2.3 note and SR 3.2.4.1, and clarification for TS 4.2.2.

A review has determined that the proposed changes require an amendment to the COL. However, a review of the anticipated construction and operational effects of the requested amendment has determined that the requested amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9), in that:

(i) There is no significant hazards consideration.

As documented in Section 4.1, Significant Hazards Consideration, of this license amendment request, an evaluation was completed to determine whether or not a significant hazards consideration is involved by focusing on the three standards set forth in 10 CFR 50.92, “Issuance of amendment.” The Significant Hazards Consideration determined that (1) the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated; (2) the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated; and (3) the proposed amendment does not involve a significant reduction in a margin of safety. Therefore, it is concluded that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of “no significant hazards consideration” is justified.

(ii) There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

The proposed changes are unrelated to any aspect of plant construction or operation that would introduce any change to effluent types (e.g., effluents containing chemicals or biocides, sanitary system effluents, and other effluents) or affect any plant radiological or non-radiological effluent release quantities. Furthermore, the proposed changes do not affect any effluent release path or diminish the functionality of any design or operational features that are credited with controlling the release of effluents during plant operation. Therefore, it is concluded that the proposed amendment does not involve a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite.

(iii) There is no significant increase in individual or cumulative occupational radiation exposure.

The proposed changes in the requested amendment do not affect or alter any walls, floors, or other structures that provide shielding. Plant radiation zones and controls under 10 CFR

20 preclude a significant increase in occupational radiation exposure. Therefore, the proposed amendment does not involve a significant increase in individual or cumulative occupational radiation exposure.

Based on the above review of the proposed amendment, it has been determined that anticipated construction and operational effects of the proposed amendment do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6. REFERENCES

1. NRC Safety Evaluation Report (SER) (ML12193A278) "Westinghouse Electric Company's Final Topical Report Safety Evaluation For WCAP-16943, 'Enhanced Gray Rod Cluster Assembly Rodlet Design.'"

Southern Nuclear Operating Company

ND-18-0067

Enclosure 2

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Proposed Changes to the Licensing Basis Documents

(LAR-18-005)

Note:
Added text is shown as Blue Underline
Deleted text is shown as ~~**Red Strikethrough**~~
Omitted text is shown as three asterisks (***...*...***)

(Enclosure 2 consists of 6 pages, including this cover page)

Technical Specification 1.1, Definitions

REACTOR TRIP SYSTEM (RTS) RESPONSE TIME	The RTS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RTS trip setpoint at the channel sensor until loss of ~~stationary~~ gripper coils voltage. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.

Technical Specification 3.1.4, Rod Group Alignment Limits

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.1.4.1	---------- – NOTE – Not required to be performed for rods associated with inoperable digital rod position indication or demand position indication. ---------- Verify individual rod positions within alignment limit.	12 hours
SR 3.1.4.2	*...*...*	*...*...*
SR 3.1.4.3	---------- – NOTE – Not applicable to GRCAs. ---------- Verify rod drop time of each rod, from the fully withdrawn position, is ≤ 2.7 seconds from the beginning of decay of ~~stationary~~ gripper coil voltage to dashpot entry, with: a. Tavg ≥ 500°F, and b. All reactor coolant pumps operating.	Once prior to reactor criticality after each removal of the reactor head, and after each earthquake requiring plant shutdown

Technical Specification 3.1.7, Rod Position Indication

LCO 3.1.7	The Digital Rod Position Indication (DRPI) for each control rod ~~System~~ and the Bank Demand Position Indication for each group ~~System~~ shall be OPERABLE.
APPLICABLITY	MODES 1 and 2.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each inoperable DRPI ~~rod position indicator~~ and each demand position indication~~indicator~~.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One DRPI per group inoperable in ~~for~~ one or more groups.	A.1	Verify the position of the rods with inoperable DRPI indirectly ~~position indicators~~ by using the incore detectors ~~On Line Power Distribution Monitoring System (OPDMS)~~.	Once per 8 hours
	OR		
	A.2	Reduce THERMAL POWER to ≤ 50% RTP.	8 hours

Technical Specification 3.1.7, Rod Position Indication (continued)

(Reviewer Information: Note that if LAR 17-024 is approved prior to this LAR, then Required Action B.2 will have been omitted and current Required Action B.4 will become proposed B.2 rather than B.3.)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. More than one DRPI per group inoperable in one or more groups.	B.1	Place the control rods under manual control.	Immediately
	AND		
	B.2	Monitor and record Reactor Coolant Sytem (RCS) T_{avg}.	Once per 1 hour
	AND		
	~~B.3~~	~~Verify the position of the rods with inoperable position indicators indirectly by using the incore detectors.~~	~~Once per 8 hours~~
	~~AND~~		
	B.3~~4~~	Restore inoperable DRPI(s) ~~position indicators~~ to OPERABLE status such that a maximum of one DRPI per group is inoperable.	24 hours
C. One or more rods with inoperable DRPI ~~position indicators~~ have been moved in excess of 24 steps in one direction since the last determination of the rod's position.	C.1	Verify the position of the rods with inoperable DRPI indirectly ~~position indicators~~ by using the incore detectors~~QPDMS~~.	4 hours
	OR		
	C.2	Reduce THERMAL POWER to ≤ 50% RTP.	8 hours

Technical Specification 3.1.7, Rod Position Indication (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or more demand position indication ~~indicator~~ per bank inoperable in ~~for~~ one or more banks.	D.1.1 Verify by administrative means all DRPIs for the affected banks are OPERABLE. AND D.1.2 Verify the most withdrawn rod and the least withdrawn rod of the affected banks are ≤ 12 steps apart. OR D.2 Reduce THERMAL POWER to ≤ 50% RTP.	Once per 8 hours Once per 8 hours 8 hours
E. Required Action and associated Completion Time not met.	E.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.7.1	---------- – NOTE – Not required to be met for DRPI associated with a rod that does not meet LCO 3.1.4, Rod Group Alignment Limits. ---------- Verify each DRPI agrees within 12 steps of the group demand position for the full indicated range of rod travel.	Once prior to criticality after each removal of the reactor head

Technical Specification 3.2.3, AXIAL FLUX DIFFERENCE (AFD) (Constant Axial Offset Control (CAOC) Methodology)

Revise LCO 3.2.3 NOTE 4 as shown below.

4. A total of 16 hours of operation may be accumulated with AFD outside the target band without penalty deviation time during surveillance of ~~power range~~ Power Range Neutron Flux channels in accordance with SR 3.3.1.5, provided AFD is maintained within acceptable operation limits.

Technical Specification 3.2.4, QUADRANT POWER TILT RATIO (QPTR)

Revise SR 3.2.4.1 NOTE 1 as shown below.

1. With one ~~power range~~ Power Range Neutron Flux channel inoperable and THERMAL POWER < 75% RTP, the remaining three ~~power range~~ Power Range Neutron Flux channels can be used for calculating QPTR.

Technical Specification 4.2.2, Control Rod and Gray Rod Assemblies

Revise the second paragraph of TS 4.2.2 as shown below.

Additionally, there are 16 low worth Gray Rod Cluster Assemblies (GRCAs), with 24 rodlets/GRCA, which, in conjunction with the RCCAs, are used to augment mechanical shim (MSHIM) ~~load follow~~ operation.

Southern Nuclear Operating Company

ND-18-0067

Enclosure 3

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Conforming Technical Specification Bases Changes

(LAR-18-005)

(For Information Only)

Note:
Added text is shown as Blue Underline
Deleted text is shown as ~~**Red Strikethrough**~~
Omitted text is shown as three asterisks (***...*...***)

(Enclosure 3 consists of 6 pages, including this cover page)

Technical Specification Bases B 3.1.4, Rod Group Alignment Limits

Revise the last three paragraphs of the BACKGROUND section as shown below:

The axial position of shutdown rods and control rods is indicated by two separate and independent means ~~systems,~~ which are the Bank Demand Position Indication ~~System~~ (commonly called group step counters) and the Digital Rod Position Indication (DRPI) ~~System~~.

DRPI and Bank Demand Position Indication are described in more detail in the Bases for LCO 3.1.7, "Rod Position Indication."
~~The Bank Demand Position Indication System counts the pulses from the rod control system that moves the rods. There is one step counter for each group of rods. Individual rods in a group all receive the same signal to move and should, therefore, all be at the same position indicated by the group step counter for that group. The Bank Demand Position Indication System is considered highly precise (± 1 step or ± 5/8 inch). If a rod does not move one step for each demand pulse, the step counter will still count the pulse and incorrectly reflect the position of the rod.~~

~~The DRPI System provides a highly accurate indication of actual control rod position, at a lower precision than the step counters. This system is based on inductive analog signals from a series of coils spaced along a hollow tube. To increase the reliability of the system, the inductive coils are connected alternately to data system A or B. Thus, if one data system fails, the DRPI will go on half accuracy. The DRPI System is capable of monitoring rod position within at least ± 12 steps with either full accuracy or half accuracy.~~

Revise the SURVEILLANCE REQUIREMENTS section for SR 3.1.4.1 to include a new final paragraph as shown below:

Verification that individual rod positions are within alignment limits at a Frequency of 12 hours provides a history that allows the operator to detect that a rod is beginning to deviate from its expected position. The specified Frequency takes into account other rod position information that is continuously available to the operator in the main control room so that during actual rod motion, deviations can immediately be detected.

The SR is modified by a Note that permits it to not be performed for rods associated with an inoperable demand position indication or an inoperable DRPI. The alignment limit is based on the position indication, and would not be available if the indication is inoperable. LCO 3.1.7, "Rod Position Indication," provides Actions to verify the rods are in alignment when one or more rod position indications are inoperable.

Technical Specification Bases B 3.1.7, Rod Position Indication

Revise the first paragraph of the BACKGROUND section as shown below:

> According to GDC 13 (Ref. 1), instrumentation to monitor variables and systems over their operating ranges during normal operation, anticipated operational occurrences (AOOs), and accident conditions must be OPERABLE. LCO 3.1.7 is required to ensure OPERABILITY of the control rod position indication ~~indicators~~ to determine control rod positions and thereby ensure compliance with the control rod alignment and insertion limits.

Revise the sixth paragraph of the BACKGROUND section as shown below:

> The axial position of shutdown rods and control rods are determined by two separate and independent means: ~~systems:~~ the Bank Demand Position Indication ~~System~~ (commonly called group step counters) and the Digital Rod Position Indication (DRPI) ~~System~~.

Revise the last two paragraphs of the BACKGROUND section as shown below:

> ~~The~~ Bank Demand Position Indication ~~System~~ counts the pulses from the Rod Control System that move the rods. There is one step counter for each group of rods. Individual rods in a group receive the same signal to move and should, therefore, be at the same position indicated by the group step counter for that group. ~~The~~ Bank Demand Position Indication ~~System~~ is considered highly precise (± 1 step or ± 5/8 inch). If a rod does not move one step for each demand pulse, the step counter will still count the pulse and incorrectly reflect the position of the rod.
>
> ~~The~~ DRPI ~~System~~ provides a highly accurate indication of actual control rod position, at a lower precision than the step counters. This indication ~~system~~ is based on inductive analog signals from detectors consisting of a series of coils spaced along a hollow tube with a center to center distance of 3.75 inches, which is 6 steps. To increase the reliability of the indication~~system~~, the inductive coils are divided into A and B coil stacks. The adjacent coils in a given detector will alternate between the A and B stacks so that if there is any single coil failure in a DRPI detector (or coil failures limited to one stack) ~~connected alternately to data system A or B. Thus, if one system fails,~~ the DRPI will function at half accuracy with an effective coil spacing of 7.5 inches, which is 12 steps. Therefore, the normal indication accuracy of the DRPI ~~System~~ is ± 6 steps (± 3.75 inches), and the maximum uncertainty is ±12 steps (± 7.5 inches). With an indicated deviation of 12 steps between the group step counter and DRPI, the maximum deviation between actual rod position and the demand position could be 24 steps, or 15 inches. Coil stack A data is transmitted to Data Cabinet A, and coil stack B data is transmitted to Data Cabinet B. Any failure of a single data cabinet would result in DRPI detectors functioning at half accuracy.

Technical Specification Bases B 3.1.7, Rod Position Indication (continued)

Revise the second paragraph of the APPLICABLE SAFETY ANALYSIS section as shown below:

The control rod position indication ~~indicator~~ channels satisfy Criterion 2 of 10 CFR 50.36(c)(2)(ii). The control rod position indication monitors ~~indicators monitor~~ control rod position, which is an initial condition of the accident.

Revise the LCO section as shown below:

LCO 3.1.7 specifies that one DRPI ~~System~~ for each control rod and one Bank Demand Position Indication ~~System~~ for each group shall be OPERABLE~~ for each control rod~~. For the control rod position indication ~~indicators~~ to be OPERABLE requires meeting the SR of the LCO and the following:

a. The DRPI for each control rod functioning with full or half accuracy, and ~~System indicates within 12 steps of the group step counter demand position as required by LCO 3.1.4, "Rod Group Alignment Limits"~~;

~~b. For the DRPI System there are no failed coils; and~~

~~c~~b. The Bank Demand Indication ~~System~~ for each group has been calibrated either in the fully inserted position or to the DRPI ~~System~~.

OPERABILITY of the DRPI is not affected by the coils as long as all A or all B coils in a given detector are functioning, because position indication for the rod would be provided with half accuracy or better. Half accuracy indication would also be provided if a single data cabinet fails, as long as there are no additional failures for the coils associated with the functioning data cabinet.

The 12 step agreement limit between the Bank Demand Position Indication ~~System~~ and the DRPI ~~System~~ indicates that the Bank Demand Position Indication ~~System~~ is adequately calibrated and can be used for indication of the measurement of control rod bank position.

A deviation of less than the allowable limit given in LCO 3.1.4 in position indication for a single control rod ensures high confidence that the position uncertainty of the corresponding control rod group is within the assumed values used in the analysis (that specified control rod group insertion limits).

These requirements provide adequate assurance that control rod position indication during power operation and PHYSICS TESTS is accurate, and that design assumptions are not challenged. OPERABILITY of the position indication ~~indicator~~ channels ensures that inoperable, misaligned, or mispositioned control rods can be detected. Therefore, power peaking, ejected rod worth, and SDM can be controlled within acceptable limits.

Technical Specification Bases B 3.1.7, Rod Position Indication (continued)
(Reviewer Information: Note that if LAR 17-024 is approved prior to this LAR, then Required Action B.2 will have been omitted and the ACTION B heading will become proposed "B.1 and B.2" rather than as shown.)

Revise the ACTIONS section as shown below:

The ACTIONS table is modified by a Note indicating that a separate Condition entry is allowed for each inoperable DRPI ~~rod position indicator per group~~ and each demand position indication ~~indicator per bank~~. This is acceptable because the Required Actions for each Condition provide appropriate compensatory actions for each inoperable position indication ~~indicator~~.

A.1

When one DRPI ~~channel~~ per group fails, the position of the rod can still be determined indirectly by use of the incore detectors~~On-line Power Distribution Monitoring System (OPDMS)~~. Based on experience, normal power operation does not require excessive movement of banks. If a bank has been significantly moved, the Actions of C.1 or C.2 below are required. Therefore, verification of RCCA position within the Completion Time of 8 hours is adequate to allow continued full power operation, since the probability of simultaneously having a rod significantly out of position and an event sensitive to that rod position is small.

......*

B.1, B.2, and B.3~~, and B.4~~

......*
provided the non-indicating rods have not been moved. Verification of control rod position once per 8 hours (per Required Action A.1) is adequate for allowing continued full power operation for a limited, 24 hour period, since the probability of simultaneously having a rod significantly out of position and an event sensitive to that rod position is small. The 24 hour Completion Time provides sufficient time to troubleshoot and restore the DRPI ~~system~~ to operation while avoiding the plant challenges associated with the shutdown without full rod position indication.

......*

C.1 and C.2

These Required Actions clarify that when one or more rods with inoperable DRPI ~~position indicators~~ have been moved in excess of 24 steps in one direction since the position was last determined, the Required Actions of A.1 and A.2 or B.1 are still appropriate….

Technical Specification Bases B 3.1.7, Rod Position Indication (continued)

Revise the ACTIONS section as shown below:

D.1.1 and D.1.2

With one or more demand position indication ~~indicator~~ per bank inoperable in one or more banks, the rod positions can be determined by the DRPI ~~System~~. Since normal power operation does not require excessive movement of rods, verification by administrative means that the rod position indication is ~~indicators are~~ OPERABLE and the most withdrawn rod and the least withdrawn rod are ≤ 12 steps apart within the allowed Completion Time of once every 8 hours is adequate.

Revise the SURVEILLANCE REQUIREMENTS section for SR 3.1.7.1 to include a new final paragraph as shown below:

This surveillance is performed prior to reactor criticality after each removal of the reactor head, as there is the potential for unnecessary plant transients if the SR were performed with the reactor at power.

The Surveillance is modified by a Note which states it is not required to be met for DRPI associated with a rod that does not meet LCO 3.1.4. If a rod is known to not be within 12 steps of the group demand position, the ACTIONS of LCO 3.1.4 provide the appropriate Actions.

Technical Specification Bases B 3.2.3, Axial Flux Difference (AFD)

Revise the last paragraph of the LCO section as shown below:

For surveillance of the ~~power range~~ Power Range Neutron Flux channels performed according to SR 3.3.1.5, Note 4 allows deviation outside the target band for 16 hours and no penalty deviation time accumulated. Some deviation in the AFD is required for doing the NIS calibration with the incore detector system. This calibration is performed every 92 effective full power days (EFPD).