

ATTACHMENT 1

DRAFT TECHNICAL SPECIFICATIONS  
FOR IMPROVING CONTROL ROD RELIABILITY

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REACTOR CORE AND REACTIVITY CONTROL

OPERABLE CONTROL RODS/SHUTDOWN MARGIN

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LIMITING CONDITION FOR OPERATION

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4.1.2.1 A sufficient number of control rod pairs shall be OPERABLE or fully inserted to achieve a SHUTDOWN MARGIN greater than or equal to 0.01 delta k, assuming:

- a. A CORE AVERAGE TEMPERATURE of 220 degrees F,
- b. All OPERABLE control rod pairs inserted (the regulating control rod pair shall not be considered OPERABLE for the purpose of calculating the SHUTDOWN MARGIN),
- c. The decay of Xenon and the buildup of Samarium,
- d. The highest worth rod pair is fully withdrawn,
- e. The rod worth of any partially inserted inoperable rod pairs at their partially inserted position.

APPLICABILITY: POWER OPERATION, LOW POWER, and STARTUP MODES

ACTION:

- A. When a control rod is determined to be inoperable:
  1. Within 12 hours achieve full insertion of the rod pair and verify by either: (a) an "in" limit indication and a position indication of  $0 \pm 10$  inches or (b) a watt-meter test, or
  2. Determine within 24 hours that the specified SHUTDOWN MARGIN can be met with the rod pair considered inoperable, or
  3. Place the reactor in a SHUTDOWN MODE within 36 hours from the time of the determination that the rod pair was inoperable.

- B. If more than two rod pairs (not including the regulating rod pair) are determined to be inoperable at any one time an engineering review of potential common mode failure mechanisms will be made.

ASSOCIATED SURVEILLANCE REQUIREMENTS:

SR 5.1.1.1 Verification of SHUTDOWN MARGIN

SR 5.1.1.2 Control Rod OPERABILITY

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#### BASIS FOR SPECIFICATION LCO 4.1.2.1

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The purpose of this Limiting Condition for Operation is to assure that during operation a sufficient amount of negative reactivity in control rod pairs is capable of being inserted by the automatic and manual scram functions to shutdown the reactor with the highest worth rod pair fully withdrawn. A SHUTDOWN MARGIN of at least 0.01 delta k has been specified at a CORE AVERAGE TEMPERATURE of 220 degrees F with decay of Xe-135 and buildup of Sm-149. The CORE AVERAGE TEMPERATURE will normally be significantly above 220 degrees F for several days following a scram from power yielding a SHUTDOWN MARGIN greater than 0.01 delta k. In addition the decay of Xe-135 and buildup of Sm-149 occur over a several day period, again causing the SHUTDOWN MARGIN immediately after scram to be larger than the 0.01 delta k specified. Therefore, a twelve hour ACTION combined with a 24 hour delay in verification of the SHUTDOWN MARGIN is sufficient for the purpose of this specification.

For the purpose of this specification, OPERABLE control rod pairs are those withdrawn or partially withdrawn control rod pairs for which periodic surveillance demonstrates both scram capability and valid position indication, thus assuring that the reactivity value of the control rod pairs inserted during the scram is known. Control rod pairs without demonstrated scram capability can be withdrawn and used to control core reactivity via action of the control rod drive motors since control rod pairs which fail to scram by gravity can be positioned by the drive motors. The reactivity value of partially inserted control rod pairs without demonstrated scram capability can be included at their partially inserted position in the calculation of the core reactivity. However, no credit can be taken for any additional insertion with regard to available SHUTDOWN MARGIN.

Control rod pairs that are verified to be fully inserted are performing their design function and can be included in calculating the SHUTDOWN MARGIN, irrespective of their OPERABILITY. The regulating control rod pair is not considered OPERABLE for the purpose of this specification since its scram capability cannot be verified by surveillance during operation at power.

The allowable number of inoperable, not fully inserted, control rod pairs will depend upon the total SHUTDOWN MARGIN which varies during the REFUELING CYCLE. Measured critical control rod positions along with calculated values of: Xe-135 and Sm-149 worths, control rod pair worths and temperature coefficient are used to calculate the number of inoperable, not fully inserted, control rod pairs which meet this specification.

If more than two control rod pairs are determined to be inoperable at any one time, a review of the causes will be made to determine if a potential exists for a common mode failure which could impact on the OPERABILITY of other control rod pairs.

REACTOR CORE AND REACTIVITY CONTROL

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SHUTDOWN MARGIN-SHUTDOWN

LIMITING CONDITION FOR OPERATION

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- 4.1.2.2 A sufficient number of control rod pairs shall be fully inserted to maintain a SHUTDOWN MARGIN greater than or equal to 0.01 delta k, assuming:
- A CORE AVERAGE TEMPERATURE of 80 degrees F.
  - The full decay of Xenon and the buildup of Samarium.
  - The full decay of Pa-233.
  - The highest worth rod pair that is capable of being withdrawn by action of its drive motor is fully withdrawn.

APPLICABILITY: SHUTDOWN and REFUELING MODES

ACTION: With SHUTDOWN MARGIN less than required

- Suspend all control rod or fuel manipulations involving positive reactivity changes, and
- Within 8 hours of determining that the specified SHUTDOWN MARGIN is not met, either:
  - Fully insert (as verified by either: (a) an "in" limit indication and a position indication of  $0 \pm 10$  inches or (b) a watt-meter test) sufficient control rods to achieve the specified SHUTDOWN MARGIN, or
  - Actuate sufficient reserve shutdown material to achieve the specified SHUTDOWN MARGIN.

ASSOCIATED SURVEILLANCE REQUIREMENTS:

SR 5.1.1 1 Verification of SHUTDOWN MARGIN

SR 5.1.1 3 Control Rod Instrumentation



#### BASIS FOR SPECIFICATION LCO 4.1.2.2

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The purpose of this specification is to assure that during REFUELING and SHUTDOWN MODES a sufficient number of control rod pairs are fully inserted to keep the reactor in a shutdown condition. A SHUTDOWN MARGIN of at least 0.01 delta k has been specified at a CORE AVERAGE TEMPERATURE of 80 degrees F with decay of Xe-135, buildup of Sm-149 and decay of Pa-233. The CORE AVERAGE TEMPERATURE will normally be significantly above 80 degrees F for many months after shutdown and the decay of Pa-233 occurs over a few months. Therefore the SHUTDOWN MARGIN immediately after achieving shutdown will normally be larger than the 0.01 delta k specified, and the 8 hour ACTION combined with a 24 hour delay in verification of the SHUTDOWN MARGIN is sufficient for the purpose of this specification.

Experience has shown that a control rod drive which cannot be verifiably demonstrated to be capable of being inserted by scram, can still be inserted under action of the control rod drive motor. Therefore, this specification need only require that the rod pair be actually inserted to achieve the specified SHUTDOWN MARGIN.

The specified SHUTDOWN MARGIN also assumes the full withdrawal of the highest worth rod pair that is capable of being withdrawn by action of its drive motor. The specified SHUTDOWN MARGIN will therefore be maintained considering the accidental withdrawal of the highest worth rod pair and its failure to reinsert by action of the automatic or manual scram functions. Disabling of control rod drives by racking out the drive power at the motor control center results in the inability to withdraw the rod pair by action of the drive motor. Accidental withdrawal of any drive disabled in this manner does not need to be assumed in the evaluation of the SHUTDOWN MARGIN.

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REACTOR CORE AND REACTIVITY CONTROL

FULLY INSERTED AND FULLY WITHDRAWN ROD PAIR POSITION INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

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- 4.1.2.3 For fully inserted or fully withdrawn control rod pairs the position indication system shall be OPERABLE and capable of determining the control rod positions within  $\pm 10$  inches by both a position indication and a limit indication.

APPLICABILITY: ALL MODES

ACTION:

- A. Any inoperable position indication shall be repaired prior to the return to operation following the next refueling outage.
- B. For fully inserted control rod pairs, if full insertion cannot be verified by an "in" limit indication and at least one position indication of  $0 \pm 10$  inches within 24 hours either:
  - 1. Verify full insertion by a watt-meter test, or
  - 2. Identify the rod pair as being inoperable and fully withdrawn in the determination of the SHUTDOWN MARGIN for LCO 4.1.2.1 or 4.1.2.2, and
    - a. The rod pair shall be identified as being fully inserted for the purpose of LCO 4.1.3 with only one full in position or limit indication, and
    - b. The discrepancy portion of the Region Peaking Factor Surveillance of SR 5.1.7 shall be performed within 48 hours and weekly thereafter during operation in this condition while in the LOW POWER and POWER MODES, and
    - c. Complete the verification of SHUTDOWN MARGIN of SR 5.1.1.1.
- C. For fully withdrawn control rod pairs, if full withdrawal cannot be verified by an "out" limit indication and at least one position indication of  $190 \pm 10$  inches:

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1. The rod pair shall be identified as being inoperable for the purpose of determining the SHUTDOWN MARGIN for LCO 4.1.2.1, and
2. The rod pair shall be identified as being partially inserted for the purpose of LCO 4.1.2.4 and 4.1.3, and
3. The discrepancy portion of the Region Peaking Factor Surveillance of SR 5.1.7 shall be performed within 48 hours and weekly thereafter during operation in this condition while in the LOW POWER and POWER MODES, and
4. Complete the verification of SHUTDOWN MARGIN of SR 5.1.1.1 within 24 hours.

ASSOCIATED SURVEILLANCE REQUIREMENTS:

SR 5.1.1.3 Control Rod Instrumentation

SR 5.1.7 Region Peaking Factor Surveillance



## A. Fully Inserted Rod Pairs

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Redundant indication of full insertion of a rod pair is achieved by one full "in" limit indication and one position indication of  $0 \pm 10$  inches. Position indication will normally be provided by the installed digital or analog position indicators or limit lights. Other means can be used to read the position from the position potentiometers or limit switches, if the accuracy of installed indicators or limit lights are in question. An error of  $\pm 10$  inches in the full "in" position will not significantly impact on the reactivity value of the rod pair due to the small differential reactivity worth near the fully inserted position. If these redundant indications are not available the watt-meter test provides a definitive verification of full insertion of the rod pair. Identifying a rod pair which does not have verifiable full insertion as not being fully inserted or OPERABLE for the determination of the SHUTDOWN MARGIN for LCO 4.1.2.1 and 4.1.2.2 results in a conservative determination of the SHUTDOWN MARGIN.

Performance of the discrepancy portion of the Region Peaking Factor Surveillance of SR 5.1.7 within 48 hours and more frequently during operation in the LOW POWER and POWER MODES will assure that any partial insertion which would significantly impact upon the core power distribution will be detected in a timely fashion.

## B. Fully Withdrawn Rod Pairs

Redundant indication of full withdrawal of a rod pair is achieved by one full "out" limit indication and one position indication of  $190 \pm 10$  inches. Position indication will normally be provided by the installed digital or analog position indicators or limit lights. Other means can be used to read the position from the position potentiometers or limit switches, if the accuracy of installed indicators or limit lights are in question. An error of  $\pm 10$  inches in the fully withdrawn position will not significantly impact on the reactivity value of the rod pair due to the small differential reactivity worth near the fully withdrawn position. Identifying the rod pair as being inoperable for determining the SHUTDOWN MARGIN for LCO 4.1.2.1 does not take any credit for the negative scram reactivity value of the rod pair.

Performance of the discrepancy portion of the Region Peaking Factor Surveillance of SR 5.1.7 within 48 hours and more frequently during operation in the LOW POWER and POWER MODES will assure that any partial insertion which would significantly impact upon the core power distribution will be detected in a timely fashion.

Identifying the rod pair as being partially inserted for LCO 4.1.2.4 and 4.1.3 assures that any partial insertion of the rod pair will be evaluated in a conservative manner in regards to the core power distribution.

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PARTIALLY INSERTED ROD PAIR POSITION INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

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- 4.1.2.4 For partially inserted control rod pairs other than the regulating rod pair, the position indication system shall be OPERABLE and capable of determining control rod position within  $\pm 12$  inches.

APPLICABILITY: POWER, LOW POWER and STARTUP MODES

ACTION:

- A. When the rod position indications from two separate potentiometers disagree by more than  $\pm 12$  inches:
  - 1. The more fully inserted indication will be used in determining the SHUTDOWN MARGIN for LCO 4.1.2.1, and
  - 2. The more fully inserted position will be used in LCO 4.1.3, and
  - 3. The reactivity discrepancy portion of the Reactivity Status Surveillance of SR 5.1.4 will be performed daily, and
  - 4. The discrepancy portion of the Region Peaking Factor Surveillance of SR 5.1.7 will be performed within 48 hours and weekly thereafter while operating in this condition.
- B. When only one position indication is available from the two separate potentiometers, within 24 hours and monthly thereafter adjust the reactor power to achieve a fully inserted or fully withdrawn condition and verify the accuracy of the position indication within  $\pm 12$  inches of the "in" or "out" limit indication. If this verification can be achieved, the rod pair can be repositioned in the partially inserted position and the ACTION of A.3 and A.4 above will be performed. If this verification cannot be achieved the ACTION of C below will be performed.

C. When no position indication is available, within 24 hours:

1. Reduce reactor power as required to achieve full insertion of the rod pair without position indication, and
2. Verify full insertion of the rod pair by watt-meter testing, or
3. Perform the ACTION of B.2 under LCO 4.1.2.3.

ASSOCIATED SURVEILLANCE REQUIREMENTS:

SR 5.1.1.3 Control Rod Instrumentation

SR 5.1.4 Reactivity Status Surveillance

SR 5.1.7 Region Peaking Factor Surveillance

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A. Deviation of position indication greater than  $\pm 12$  inches:

Errors in the position indication of partially inserted rods of up to  $\pm 12$  inches will not significantly impact upon the core SHUTDOWN MARGIN or core power distribution.

If the analog and digital control rod pair position indications disagree by more than  $\pm 12$  inches the use of the more fully inserted indicated position in the evaluation of the SHUTDOWN MARGIN for LCO 4.1.2.1 will assure that the reactivity value capable of being inserted upon scram is evaluated in a conservative manner. Any error in control rod position which is significant in terms of its reactivity value or in terms of the core power distribution will be identified in the performance of the Reactivity Status Surveillance of SR 5.1.4 or the discrepancy portion of the Region Peaking Factor Surveillance of SR 5.1.7. Performance of these two surveillances on a more frequent basis when the control rod position indication deviate by more than the specified amount will assure that position indication errors which are of significance will be detected in a timely fashion.

Using the more fully inserted indicated position in assessing conformance with LCO 4.1.3 assures that the LCO is evaluated in a conservative manner.

B. With one position indication:

With only one position indication the validity of this indication is verified within 24 hours by comparison with an "in" or "out" limit indication. This verification is repeated monthly thereafter. By performing these comparisons the accuracy of the single position indicator is verified and the partially inserted control rod pair position indication is verified. Performing the reactivity portion of the Reactivity Status Surveillance and the discrepancy portion of the Region Peaking Factor Surveillance on a more frequent basis yields additional verification that any uncertainty in the position indicator will not significantly impact upon the core reactivity or the core power distribution.

If the accuracy of the single position indicator cannot be verified by comparison with an "in" or "out" limit indication the ACTION will be the same as if no position indication is available.

C. With no position indication:

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Reduction of the reactor power level as required to achieve full insertion and verification of full insertion within 24 hours will assure that the control rod pair is performing its design function. If verification of full insertion cannot be achieved, performing the ACTION of B.2 under LCO 4.1.2.3 will assure that the SHUTDOWN MARGIN is evaluated in a timely and conservative manner and that any partial insertion which would significantly impact upon the core power distribution will be detected in a timely fashion.

REACTOR CORE AND REACTIVITY CONTROL

CONTROL ROD PENETRATION PURGE FLOW

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LIMITING CONDITION FOR OPERATION

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- 4.1.2.5 Purge flow will be maintained to each of the eight subheaders of the control rod drive penetrations.

APPLICABILITY: POWER OPERATION, LOW POWER and STARTUP MODES

ACTION:

If subheader purge flow is lost and cannot be restored, the reactor shall be placed in the SHUTDOWN MODE within 24 hours if the primary system moisture level is greater than 10 ppm total oxidants.

ASSOCIATED SURVEILLANCE REQUIREMENTS:

SR 5.1.1.4 Control Rod Penetration Purge Flow Instrumentation

#### BASIS FOR SPECIFICATION LCO 4.1.2.5

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The purge flow into the control rod drive assembly floods the control rod drive and limits the upward flow rate of contaminated primary system helium coolant. With primary system oxidant levels greater than 10 ppm, operation without purge flow is limited to 24 hours. If the primary system oxidant level is less than or equal to 10 ppm total oxidants, operation without purge flow is allowable since this is the design environment for the drive.

During the SHUTDOWN or REFUELING MODES the driving force for upward flow of contaminants is significantly reduced and purge flow is not required.

REACTOR CORE AND REACTIVITY CONTROL

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VERIFICATION OF SHUTDOWN MARGIN

SURVEILLANCE REQUIREMENTS

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5.1.1.1 Verification of SHUTDOWN MARGIN shall be performed as follows:

A. When in the POWER OPERATION, LOW POWER or STARTUP MODES

1. Once per week
2. As required by the ACTION statements of LCO 4.1.2.1, LCO 4.1.2.3, or LCO 4.1.2.4.

B. When in the SHUTDOWN or REFUELING MODES

1. As required by the ACTION statement of LCO 4.1.2.3, and
2. Prior to control rod withdrawal if all control rod pairs are not fully inserted prior to the withdrawal action, or
3. Prior to the replacement of fuel in a refueling region, or
4. Prior to control rod withdrawal to achieve criticality to confirm that upon reaching criticality the requirement of LCO 4.1.2.1 can be met (if not performed in the previous week).

ASSOCIATED LCO's

LCO 4.1.2.1 OPERABLE Control Rods/SHUTDOWN MARGIN

LCO 4.1.2.2 SHUTDOWN MARGIN-Shutdown

LCO 4.1.2.3 Fully Inserted and Fully  
Withdrawn Rod Pair Position Instrumentation

LCO 4.1.2.4 Partially Inserted Rod Pair Position Instrumentation

A. Verification of SHUTDOWN MARGIN-POWER, LOW POWER or STARTUP

Verification of the SHUTDOWN MARGIN requirements of LCO 4.1.2.1 at least weekly assures that changes in the core reactivity as a result of burnup have not occurred which would make the previous verification invalid. The core reactivity changes as a result of burnup occur slowly and weekly surveillance during operation is sufficient. In addition, the ACTION statements of LCO 4.1.2.1, 4.1.2.3, and 4.1.2.4 require more frequent verification if a control rod pair is determined inoperable.

B. Verification of SHUTDOWN MARGIN-SHUTDOWN or REFUELING

The ACTION statement of LCO 4.1.2.3 requires completion of the verification of the SHUTDOWN MARGIN within 24 hours of determining that any fully inserted control rod pair cannot be verified to be fully inserted. Within the first 24 hours after SHUTDOWN, the SHUTDOWN MARGIN is significantly larger than specified due to higher core temperatures and the presence of Xe-135 and Pa-233. A 24-hour delay will not compromise the validity of specification LCO 4.1.2.2. Verification of this LCO prior to any control rod withdrawal if all control rods are not fully inserted or prior to removal and insertion of fuel in a refueling region assures that the requirements of LCO 4.1.2.2 will be met during these actions.

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REACTOR CORE AND REACTIVITY CONTROL

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CONTROL ROD OPERABILITY

SURVEILLANCE REQUIREMENTS

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5.1.1.2 Control rod pair OPERABILITY shall be demonstrated as follows:

- A. Prior to withdrawal of control rod pairs to achieve criticality (if not performed in the previous week) by a partial scram test of at least 10 inches on all OPERABLE rod pairs. The extrapolated scram time shall be less than or equal to 152 seconds.
- B. Weekly when in the POWER OPERATION or LOW POWER MODES by a partial scram test of at least 10 inches on all partially inserted and fully withdrawn control rods except the regulating rod pair. The extrapolated scram time shall be less than or equal to 152 seconds.
- C. Daily when in the POWER OPERATION or LOW POWER MODES by a verification that all control rod drive motor temperatures are less than or equal to 272 degrees F. If the motor temperature instrumentation is not available, perform an engineering evaluation to determine that the motor temperatures are less than 272 degrees F.
- D. During each refueling outage and during each shutdown with a scheduled duration of 10 days or longer if not performed during the previous month by a full stroke scram test on all control rod pairs. The scram time shall be less than or equal to 152 seconds.
- E. During each REFUELING CYCLE perform preventive maintenance on control rod drives. The sequencing of this preventive maintenance will be such that none of the drives installed in the reactor will have gone more than six REFUELING CYCLES without receiving preventive maintenance.

ASSOCIATED LCO:

LCO 4.1.2.1 OPERABLE Control Rods/SHUTDOWN MARGIN

Control Rod Pair OPERABILITY-Partial Scram

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The partial scram tests on all rods prior to criticality or weekly on partially inserted and fully withdrawn control rod pairs during POWER and LOW POWER MODES demonstrate that the control rod pairs are capable of being inserted via an automatic or manual scram actuation. Degradation of scram capability occurs over a long term and tests prior to criticality or weekly tests during POWER or LOW POWER MODES are sufficient to identify degradation which could inhibit scram capability.

The 152 second scram time is the scram time used in the safety analyses of the FSAR. A nominal scram time of 160 seconds is also identified in the FSAR. Use of the 152 second scram time to determine OPERABILITY is thereafter conservative.

Control Rod Pair OPERABILITY-Temperature

High control rod drive temperatures which could compromise the operability of control rod drives can only occur when operating in the POWER OPERATION or LOW POWER MODES. Changes in the temperatures of these control rod drives generally occur slowly while at power and a weekly surveillance is sufficient to identify control rod drives which are operating with excessively high temperatures.

Functional testing of the temperature sensors will be performed during their initial installation and during the preventive maintenance of the drives. The 272 degrees F rod drive motor temperature used to determine OPERABILITY is the minimum temperature at which damage may occur to the drive motor or gear train as described in Section 3.8.1.1.2 of the FSAR.

Control Rod Pair OPERABILITY-Full Scram

The full stroke scram tests during each refueling outage will supplement the partial stroke weekly scram testing during POWER OPERATION and LOW POWER MODES to assure scram capability of OPERABLE rods.

Control Rod Drive Preventive Maintenance

The preventive maintenance on control rod drives will assure that control rod drives are periodically reworked to reduce the impact of long term degradation.

REACTOR CORE AND REACTIVITY CONTROL

CONTROL ROD INSTRUMENTATION

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SURVEILLANCE REQUIREMENTS

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5.1.1.3 Control rod position instrumentation OPERABILITY shall be demonstrated as follows:

- A. Perform a CHANNEL CHECK on the control rod position instrumentation, as follows:
  - 1. Prior to withdrawal from the fully inserted position.
  - 2. Upon full withdrawal.
  - 3. At least once per week during all MODES on all control rod pairs except for fully inserted rod pairs which have been disabled by racking out of the drive power.
  - 4. After a MODE change to SHUTDOWN.
- B. During each REFUELING CYCLE verify the OPERABILITY of the rod pair redundant "in" and "out" limit switches.

ASSOCIATED LCO's

LCO 4.1.2.3 Fully Inserted and Fully Withdrawn Rod Pair Position Instrumentation

LCO 4.1.2.4 Partially Inserted Rod Pair Position Instrumentation

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The CHANNEL CHECK of control rod position indication prior to withdrawal and upon full withdrawal will identify the OPERABILITY of the position indicators and the "in" and "out" limit switches prior to placing the rod pair in a partially inserted position and after being fully withdrawn from a partially inserted position using fully redundant position potentiometers and limit switches.

The weekly CHANNEL CHECK on all rods will identify the OPERABILITY of the redundant position potentiometers and one of the limit switches for the fully inserted and fully withdrawn rod pairs. For the partially inserted rod pairs only the position potentiometers can be checked. However the check prior to and after being fully withdrawn from the partially inserted position with both the potentiometers and limit switches uses fully redundant instrumentation.

The verification after a MODE change to SHUTDOWN will assure timely evaluation of the requirements of LCO 4.1.2.3.

The above CHANNEL CHECKS will normally be performed using the installed position indicators and the "in" and "out" limit lights. Other means can be used to read the position from the position potentiometers or to verify the "in" or "out" limit condition if required. If a control rod has been verified to be fully inserted by means of a watt-meter test, a CHANNEL CHECK on these rod pairs is not required and the watt-meter test need not be repeated if the rod pair has been continuously disabled from being withdrawn since the last watt-meter test by racking out of the drive power at the motor control center.

Verification of the OPERABILITY of the redundant "in" and "out" limit switches during refueling outages assures that undetected failures will not persist for the long term. Verification of the "in" limit switch can only be performed during SHUTDOWN due to the control rod withdrawal sequence requirements of LCO 4.1.3.

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REACTOR CORE AND REACTIVITY CONTROL

CONTROL ROD PENETRATION PURGE FLOW INSTRUMENTATION

SURVEILLANCE REQUIREMENTS

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- 5.1.1.4 A CHANNEL CALIBRATION and a CHANNEL FUNCTIONAL TEST of the eight subheader control rod drive purge flow measurement channels shall be performed during each REFUELING CYCLE.

ASSOCIATED LCO

LCO 4.1.2.5 Control Rod Penetration Purge Flow



BASIS FOR SPECIFICATION SR 5.1.1.4

The specified CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST will assure that the instrumentation monitoring subheaders providing purge flow to the control rod drive penetrations is OPERABLE and loss of purge flow is detectable.

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