AmerGen

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An Exelon Company

10 CFR 50.90

March 19, 2004
2130-04-20010

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

Subject: Oyster Creek Generating Station
Facility Operating License No. DPR-16
NRC Docket No. 50-219

Technical Specification Change Request No. 322 – Implementation of Option B Scram Time Testing

Pursuant to 10 CFR 50.90, AmerGen Energy Company, LLC hereby requests changes to the Technical Specifications included in Oyster Creek Operating License No. DPR-16. These changes modify the Surveillance Requirements (SR) associated with control rod scram time testing (STT). Specifically, these changes would modify the conditions under which STT of control rods is required and add a requirement to perform STT on a defined portion of control rods, at a specified frequency, during the operating cycle. These proposed SR modifications and additions would improve/modernize the Oyster Creek STT requirements to be consistent with other U.S. BWRs by: (1) eliminating unnecessary depressurized STT of non-maintenance affected control rods, (2) providing the required STT data necessary to apply actual scram times to implement improved MCPR operating limits and, (3) eliminating the resulting redundant requirement to test 'eight selected rods' after a reactor scram or other outage. Also included are editorial and pagination changes as necessary to accommodate the proposed changes.

AmerGen Energy Company, LLC requests approval of these changes by September 30, 2004. This date will allow sufficient time to update affected plant procedures and the Core Operating Limits Report (COLR) and provide adequate time to review and approve the COLR prior to Cycle 20 startup, currently scheduled for November 2004. Once approved, the amendment shall be implemented within 60 days.

This proposed change to the Technical Specifications has undergone a safety review in accordance with Section 6.5 of the Oyster Creek Technical Specifications. No new regulatory commitments are established by this submittal.

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We are notifying the State of New Jersey of this application for changes to the Technical Specifications by transmitting a copy of this letter and its attachments to the designated State Official.

If any additional information is needed, please contact Dave Robillard at (610) 765-5952.

I declare under penalty of perjury that the foregoing is true and correct.

Sincerely,

03-19-04
Executed On

Michael P. Gallagher
Director, Licensing & Regulatory Affairs
AmerGen Energy Company, LLC

Enclosures:
(1) Oyster Creek Technical Specification Change Request No. 322, Evaluation of Proposed Changes
(2) Oyster Creek Technical Specification Change Request No. 322, Markup of Proposed Technical Specification Page Changes
(3) Oyster Creek Technical Specification Change Request No. 322, Retyped Technical Specification Pages and Bases Change (For Information Only)

cc: H. J. Miller, Administrator, USNRC Region I
P. S. Tam, USNRC Senior Project Manager, Oyster Creek
R. J. Summers, USNRC Senior Resident Inspector, Oyster Creek
File No. 04027

ENCLOSURE 1

Oyster Creek Technical Specification Change Request No. 322

Evaluation of Proposed Changes

1.0 INTRODUCTION

This letter proposes to amend Operating License No. DPR-16 for Oyster Creek Generating Station.

The requested changes would revise Appendix A, Technical Specifications (TS), of the Operating License to modify the Surveillance Requirements (SR) of TS 4.2.C, "Reactivity Control". These changes would modify the conditions under which scram time testing (STT) of control rods is required and add a requirement to perform STT on a defined portion of control rods, at a specified frequency, during the operating cycle. The requested changes would also revise the SR of TS 4.10.C, "Minimum Critical Power Ratio (MCPR)," to add a requirement to determine the MCPR limits following completion of control rod STT per TS 4.2.C. These proposed SR modifications and additions would improve/modernize the Oyster Creek STT requirements to be consistent with other U.S. BWRs by: (1) eliminating unnecessary depressurized STT of non-maintenance affected control rods, (2) providing the required STT data necessary to apply actual scram times to implement improved MCPR operating limits and, (3) eliminating the resulting redundant requirement to test 'eight selected rods' after a reactor scram or other outage.

AmerGen Energy Company, LLC (AmerGen) requests that the following changed replacement pages be inserted into the existing Technical Specifications:

Revised TS pages: 4.2-1, 4.2-3, 4.10-1 and 4.10-2 (added).

The marked up pages showing the requested changes are provided in Enclosure 2.

2.0 DESCRIPTION OF PROPOSED CHANGES

The proposed amendment would revise TS 4.2.C to modify the conditions under which STT is required, in particular, eliminating the requirement to test non-maintenance affected control rods prior to startup, and eliminate the SR for testing 'eight selected rods' after a reactor scram or other outage. The proposed amendment would add a new SR to TS 4.2.C. This SR would require STT, "On a frequency of less than or equal to once per 180 days of cumulative power operation, for at least 20 control rods, on a rotating basis, with reactor coolant pressure greater than 800 psig". The proposed amendment would also revise TS 4.10.C to add a SR requiring that the MCPR operating limit be determined within 72 hours of completing scram time testing as required in Specification 4.2.C.

In addition to the above, the TS Bases will be revised to document the basis for the changes in the SR.

The proposed surveillance frequency and test population for the new SR under TS 4.2.C is based on a review of current industry standard practice and consideration of Oyster Creek operational practices and surveillance requirements. Implementation of the new SR will require plant power reductions, which will be aligned with other activities requiring plant power reductions (e.g., control rod sequence exchanges at approximately every 90 days, Core Spray System TS Surveillance testing at approximately every 90 days). Many U.S. BWRs perform the proposed surveillance every 120 days, testing

10% of the total reactor control rod population each surveillance. This results in approximately 30% of the total control rod population being tested each year of operation. The review of Oyster Creek operational practice indicates a different surveillance frequency, 180 days, is more appropriate and constitutes a cost beneficial burden reduction relative to a 120 day surveillance frequency. The proposed 180 day frequency is sufficient to enable detection of Control Rod Drive (CRD) performance deficiencies experienced in the industry. A test population of at least 20 control rods is selected for this surveillance frequency. The combination of this proposed surveillance frequency and test population also results in approximately 30% of the total control rod population being tested each year of operation, which is consistent with current practice at other U.S. BWRs. Thus, the proposed surveillance frequency and test population is deemed appropriate and acceptable.

3.0 BACKGROUND

Control rod scram time testing (STT) is required per station TS following refueling outages, prolonged shutdowns and control rod maintenance. STT is performed to demonstrate that control rods are performing as expected and within the limits prescribed by the plant safety analysis.

The existing Oyster Creek TS surveillance requirements result in unnecessary scram cycles of control rods and equipment. Currently, if a control rod is not tested during the plant hydrostatic test, it must be tested at both depressurized and pressurized reactor conditions. This requirement applies whether or not maintenance has been performed on a control rod. Scram cycles under the depressurized condition are known to cause more wear on Control Rod Drive (CRD) components and will lead to shorter in-service life for the drive mechanism and impose additional, unnecessary strain on the CRD stub tubes. Depressurized STT of non-maintenance affected CRDs is not routinely performed elsewhere on U.S. BWRs. Additionally, depressurized STT is unnecessary because the CRDs will be fully tested at pressure, which will be more indicative of actual performance when the CRDs are required to perform their safety function to shutdown the reactor.

The industry standard is to perform STT on non-maintenance affected rods only prior to going above 40% thermal power following core alterations or after a reactor shutdown that is greater than 120 days. The proposed changes to the Oyster Creek TS are consistent with the practice at other U.S. BWRs and ensure that:

1. Control rods that have had no maintenance performed on their Hydraulic Control Unit (HCU) or Control Rod Drive Mechanism (CRDM) will have STT performed prior to operating above 40% thermal power following core alterations or after a reactor shutdown that is greater than 120 days to provide scram speed data and assurance of expected performance prior to operating at higher power levels.

2. Control rods that have had work/maintenance performed on components that could affect scram speed will be functionally scram time tested to ensure operability prior to leaving them at a position other than fully inserted. If the STT for the maintenance affected rod(s) is not performed at greater than 800 psig

reactor pressure, a specification is established to perform a depressurized scram test with verification of the 90% insertion time to assure that the rod will functionally scram prior to utilizing the rod during startups, followed by a STT at greater than 800 psig reactor pressure prior to exceeding 40% thermal power.

The current Oyster Creek TS SRs specify that following a reactor scram (or other outage) STT will be performed on eight selected control rods. The STT of these eight selected rods is performed to monitor control rod performance and provide an early indication of possible deterioration and required maintenance. The addition of the new STT SR performed on a 180 day frequency will provide sufficient information for monitoring control rod performance. Thus, the 'eight rod' surveillance requirements will be deleted.

MCPR is a ratio of the fuel assembly power that would result in the onset of boiling transition to the actual fuel assembly power. The MCPR Safety Limit (SL) is set such that 99.9% of the fuel rods avoid boiling transition when operation within the limit is maintained. The MCPR operating limit is then established to ensure that no fuel damage results during anticipated operational occurrences (AOOs). Although fuel damage does not necessarily occur if a fuel rod actually experiences boiling transition, the critical power at which boiling transition is calculated to occur has been adopted as a fuel design criterion.

The onset of transition boiling is a phenomenon that is readily detected during the testing of various fuel bundle designs. Based on these experimental data, correlations have been developed to predict critical bundle power (i.e., the bundle power level at the onset of transition boiling) for a given set of plant parameters (e.g., reactor vessel pressure, core flow, and reactor coolant inlet temperature). Because plant operating conditions and bundle power levels are monitored and determined relatively easily, monitoring the MCPR is a convenient way of ensuring that fuel failures due to inadequate cooling do not occur.

The analytical methods and assumptions used in evaluating the AOOs to establish the MCPR operating limit are identified in the Bases for TS Section 3.10.C. To ensure the MCPR SL is not exceeded during any transient event that occurs with moderate frequency, limiting transients have been analyzed to determine the largest reduction in critical power ratio (CPR). The types of transients evaluated are loss of flow, increase in pressure and power, positive reactivity insertion, and coolant temperature decrease. The limiting transient yields the largest change in CPR (ΔCPR). When the largest ΔCPR is added to the MCPR SL, the required operating limit MCPR is obtained.

The MCPR operating limits derived from the transient analysis are dependent on the operating core flow state to ensure adherence to fuel design limits during the worst transient that occurs with moderate frequency. The MCPR operating limits specified in the Core Operating Limits Report (COLR) are the result of the design basis accident and transient analysis. TS 3.10.C and TS 4.10.C require that all MCPRs be greater than or equal to the MCPR operating limits specified in the COLR when thermal power is ≥ 25% rated thermal power.

For most BWR plants, the MCPR operating limits have historically been established by pressurization events (limiting events). Currently, the Oyster Creek TS scram speed (i.e., the scram times required by TS 3.2.B, "Control Rod System") is used to determine the MCPR operating limits (Option A methodology). However, most BWRs have control rod drives that provide scram speeds that are faster than the TS requirements. For example, the core average scram time to 20% insertion (~position 39) for Oyster Creek, for Operating Cycles 16 through 19, was approximately 0.70 seconds, as compared to the TS requirement of 0.900 seconds. As a method to improve operating limits, many BWRs have credited the application of a mean scram speed based MCPR operating limits (Option B methodology). Under this method, the transient analyses credit the mean control rod scram speed performance. Faster scram speeds produce lower MCPR operating limits for pressurization events.

To implement the Option B methodology, it must be demonstrated that the measured scram speed distribution is consistent with that used in the transient analyses. Therefore, the Option B basis requires additional scram speed data beyond what is currently required by the Oyster Creek TS. The proposed new SR in TS 4.2.C determines the actual scram speed distribution. The actual scram speed distribution is compared to the assumed distribution. The MCPR operating limit is then determined based either on the applicable limit associated with scram times of TS 3.2.B.3 or the actual scram times. This determination must be performed and any necessary changes must be implemented within 72 hours after each set of control rod scram time tests required by TS 4.2.C because the effective scram speed distribution may change during the cycle or after maintenance that could affect scram times. The proposed SR for TS 4.10.C (determine MCPR operating limit within 72 hours) is based on the improved standard TS and is consistent with the specified completion time in standard TS. The 72 hour completion time is acceptable due to the relatively minor changes in the actual control rod scram speed distribution expected during the operating cycle. These relatively minor changes to the control rod scram speed distribution are unlikely to result in a change to the required MCPR operating limit. Furthermore, sufficient margin to the MCPR operating limit is generally maintained during operation such that even in the unlikely case that a change to the MCPR operating limit is required, margin to the new MCPR operating limit is expected to be available. Maintaining the actual reactor core MCPR within the MCPR operating limit ensures that the MCPR Safety Limit cannot be exceeded.

4.0 REGULATORY REQUIREMENTS & GUIDANCE

10 CFR 50.36, "Technical specifications," provides the regulatory requirements for the content required in a licensee's TS. 10 CFR 50.36 requires that the TS will include surveillance requirements to assure that the limiting conditions for operation will be met. The proposed SR will assure the improved MCPR operating limits based on scram times are met.

5.0 TECHNICAL ANALYSIS

The proposed change eliminates unnecessary depressurized STT of non-maintenance affected control rods and the requirement to test 'eight selected rods' after a reactor scram or other outage. The requirement to test 'eight selected rods' is replaced by a new SR to perform periodic STT. The addition of the new periodic STT SR will provide sufficient information for monitoring control rod performance. No active or passive failure mechanisms are affected by this proposed change.

The methodology for use of the Option B and Option A limits is included in the General Electric Standard Application for Reactor Fuel, GESTAR II (Ref. 1) which is referenced in the Oyster Creek TS Bases. Therefore, use of this methodology is previously approved by the NRC and is properly documented in the Oyster Creek TS. This is the same methodology used by other BWRs that have historically been limited by pressurization events.

The function of the MCPR operating limit is to ensure that no fuel damage results during anticipated operational occurrences. This function is met whether the operating limit is determined by Option A or B.

As stated above, the Option B basis requires additional scram speed data beyond what is currently required by the Oyster Creek TS. Use of the Option B analysis takes credit for faster scram speeds to provide for a lower MCPR operating limit. This lower operating limit ensures that the MCPR safety limit is not exceeded while providing for additional operating margin.

In summary, the proposed changes will modify the surveillance requirements associated with TS 4.2.C and TS 4.10.C. The proposed changes will not affect the limiting condition for operation (LCO) or any actions taken if the requirements of the LCO are not met. The proposed surveillance requirement will ensure the proper MCPR operating limit is used based on the results of the scram time testing.

6.0 REGULATORY ANALYSIS

10 CFR 50.36, paragraph (c)(3) states that surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.

The proposed changes will modify the surveillance requirements associated with TS 4.2.C and TS 4.10.C. The proposed changes eliminate unnecessary depressurized STT of non-maintenance affected control rods and the requirement to test 'eight selected rods' after a reactor scram or other outage. Scram cycles under the depressurized condition are known to cause more wear on Control Rod Drive (CRD) components and will lead to shorter in-service life for the drive mechanism. Additionally, depressurized scrams impose additional, unnecessary strain on the CRD stub tubes. The requirement to test 'eight selected rods' is replaced by a new SR to perform periodic STT. The addition of the new periodic STT SR will provide sufficient information for monitoring control rod performance. The proposed changes will not affect the limiting condition for operation or any actions taken if the requirements of the LCO are not met. The proposed surveillance requirements will ensure the proper MCPR operating limit is used based on the results of the scram time testing, so that the MCPR safety limit will not be exceeded. All analyzed transient results remain well within the design values for structures, systems and components.

In conclusion, 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.

7.0 NO SIGNIFICANT HAZARDS CONSIDERATION

AmerGen has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   The proposed change adds new surveillance requirements (SR) to the Minimum Critical Power Ratio (MCPR) Technical Specification (TS) which requires determination of the MCPR operating limit following the completion of scram time testing (STT) of the control rods. Use of the scram speed in determining the MCPR operating limit (i.e., Option B) is an alternative to the current method for determining the operating limit (i.e., Option A). The probability of an accident previously evaluated is unrelated to the MCPR operating limit that is provided to ensure no fuel damage results during anticipated operational occurrences. This is an operational limit to ensure conditions following an assumed accident do not result in fuel failure and therefore do not contribute to the occurrence of an accident. The proposed change eliminates unnecessary depressurized STT of non-maintenance affected control rods and the requirement to test 'eight selected rods' after a reactor scram or other outage. The requirement to test 'eight selected rods' is replaced by a new SR to perform periodic STT. No active or passive failure mechanisms that could lead to an accident are affected by this proposed change. Therefore, the proposed change in STT requirements does not significantly increase the probability of an accident previously evaluated.

   The proposed change ensures that the appropriate MCPR operating limit is in place. By implementing the correct MCPR operating limit the MCPR safety limit will continue to be ensured. Ensuring the MCPR safety limit is not exceeded will result in prevention of fuel failure. Therefore, since there is no increase in the potential for fuel failure there is no increase in the consequences of any accidents previously evaluated.

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

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No.

   The proposed change adds a new SR to the MCPR TS which requires determination of the MCPR operating limit following the completion of scram time testing of the control rods. The proposed change eliminates unnecessary depressurized STT of non-maintenance affected control rods and the requirement to test 'eight selected rods' after a reactor scram or other outage. The requirement to test 'eight selected rods' is replaced by a new SR to perform periodic STT. The proposed change does not involve the use or installation of new equipment. Installed equipment is not operated in a new or different manner. No new or different system interactions are created, and no new processes are introduced. No new failures have been created by the addition of the proposed SR and the use of the alternate method for determining the MCPR operating limit.

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

3. Does the proposed change involve a significant reduction in a margin of safety?

   Response: No.

   Use of Option B for determining the MCPR operating limit will result in a reduced operating limit in comparison to the use of Option A. However, a reduction in the operating limit margin does not result in a reduction in the safety margin. The MCPR safety limit remains the same regardless of the method used for determining the operating limit. The proposed change eliminates unnecessary depressurized STT of non-maintenance affected control rods and the requirement to test 'eight selected rods' after a reactor scram or other outage. The requirement to test 'eight selected rods' is replaced by a new SR to perform periodic STT. No active or passive failure mechanisms that could adversely impact the consequences of an accident are affected by this proposed change. All analyzed transient results remain well within the design values for structures, systems and components.

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

Based on the above, AmerGen concludes that the proposed amendment presents no 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.

8.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion 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.

9.0 PRECEDENT

The proposed amendment incorporates into the Oyster Creek TS changes that are specific to Oyster Creek, and therefore, this proposed amendment does not rely upon the issuance of amendments to other licensees. The wording of the proposed SR is consistent with a similar SR in the Limerick Generating Station, Unit 1 TS, approved by the NRC in Amendment 99, dated July 18, 1995.

10.0 REFERENCES

(1) NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel, GESTAR-II," as amended through Amendment 26.

OYSTER CREEK TECHNICAL SPECIFICATION

CHANGE REQUEST No. 322

ENCLOSURE 2

MARKUP OF PROPOSED TECHNICAL SPECIFICATION PAGE CHANGES

Revised TS Pages

4.2-1
4.2-3
4.10-1

4.2 REACTIVITY CONTROL

Applicability: Applies to the surveillance requirements for reactivity control.

Objective: To verify the capability for controlling reactivity.

Specification:

A. SDM shall be verified:
 1. Prior to each CORE ALTERATION, and
 2. Once within 4 hours following the first criticality following any CORE ALTERATION.

B. The control rod drive housing support system shall be inspected after reassembly.

C. 1. After each major refueling outage and prior to resuming POWER OPERATION, all operable control rods shall be scram time tested from the fully withdrawn position with reactor pressure above 800 psig;

OR

2. a. Prior to resuming POWER OPERATION, scram time testing shall be conducted with the reactor depressurized. The 90% scram insertion time shall not exceed 2.2 seconds for each control rod tested; AND

b. Prior to exceeding 40% reactor power operation, scram time testing shall be conducted with the reactor pressurized above 800 psig. The acceptance criteria of Section 3.2.B.3 shall be met.

3. Following each reactor scram from rated pressure, the mean 90% insertion time shall be determined for eight selected rods. If the mean 90% insertion time of the selected control rod drives does not fall within the range of 2.4 to 3.1 seconds or the measured scram time of any one drive for 90% insertion does not fall within the range of 1.9 to 3.6 seconds, an evaluation shall be made to provide reasonable assurance that proper control rod drive performance is maintained.

4. Following any outage not initiated by a reactor scram, eight rods shall be scram tested with reactor pressure above 800 psig provided these have not been measured in six months. The same criteria of 4.2.C(2) shall apply.

DELETE

Insert 1

D. Each partially or fully withdrawn control rod shall be exercised at least once each week. This test shall be performed within 24 hours in the event power operation is continuing with two or more inoperable control rods or in the event power operation is continuing with one fully or partially withdrawn rod which cannot be moved and for which control rod drive mechanism damage has not been ruled out. The surveillance need not be completed within 24 hours if the number of inoperable rods has been reduced to less than two and if it has been demonstrated that control rod drive mechanism collet housing failure is not the cause of an immovable control rod.

BASIS:

Adequate SDM must be demonstrated to ensure that the reactor can be made subcritical from any initial operating condition. Adequate SDM is demonstrated by testing before or during the first startup after fuel movement, control rod replacement, or shuffling within the reactor pressure vessel. Control rod replacement refers to the decoupling and removal of a control rod from a core location, and subsequent replacement with a new control rod or a control rod from another core location. Since core reactivity will vary during the cycle as a function of fuel depletion and poison burnup, the beginning of cycle (BOC) test must also account for changes in core reactivity during the cycle. Therefore, to obtain the SDM, the initial measured value must be increased by an adder, "R", which is the difference between the calculated value of maximum core reactivity during the operating cycle and the calculated BOC core reactivity. If the value of R is negative (that is, BOC is the most reactive point in the cycle), no correction to the BOC measured value is required.

The SDM may be demonstrated during an in sequence control rod withdrawal, in which the highest worth control rod is analytically determined, or during local criticals. Local critical tests require the withdrawal of out of sequence control rods.

The frequency of 4 hours after reaching criticality is allowed to provide a reasonable amount of time to perform the required calculations and have appropriate verification.

During REFUEL MODE, adequate SDM is required to ensure that the reactor does not reach criticality during core alterations. An evaluation of each in vessel fuel movement during fuel loading (including shuffling fuel within the core) shall be performed to ensure adequate SDM is maintained during refueling. This evaluation can be a bounding analyses that demonstrate adequate SDM for the most reactive configurations during the refueling may be performed to demonstrate acceptability of the entire fuel movement sequence. For the SDM demonstrations that rely solely on calculation, additional margin must be added to the SDM limit of 0.38% delta k/k to account for uncertainties in the calculation.

The control rod drive housing support system[2] is not subject to deterioration during operation. However, reassembly must be assured following a partial or complete removal.

The scram insertion times for all control rods[3] will be determined at the time of each refueling outage. The scram times generated at each refueling outage when compared to scram times previously recorded gives a measurement of the functional effects of deterioration for each control rod drive. Insert 2 ~~The more frequent scram insertion time measurements of eight selected rods are performed on a representative sample basis to monitor performance and give an early indication of possible deterioration and required maintenance. The times given for the eight rod tests are based on the testing experience of control rod drives which were known to be in good condition.~~ DELETE

Insert 1

4.2.C The maximum scram insertion time of the control rods shall be demonstrated through measurement and, during single control rod scram time tests, the control rod drive pumps shall be isolated from the accumulators:

1. For all control rods prior to thermal power exceeding 40% power with reactor coolant pressure greater than 800 psig, following core alterations or after a reactor shutdown that is greater than 120 days.

2. For specifically affected individual control rods following maintenance on or modification to the control rod or control rod drive system which could affect the scram insertion time of those specific control rods in accordance with either "a" or "b" as follows:

   a.1 Specifically affected individual control rods shall be scram time tested with the reactor depressurized and the scram insertion time from the fully withdrawn position to 90% insertion shall not exceed 2.2 seconds, and

   a.2 Specifically affected individual control rods shall be scram time tested at greater than 800 psig reactor coolant pressure prior to exceeding 40% power.

   b. Specifically affected individual control rods shall be scram time tested at greater than 800 psig reactor coolant pressure.

3. On a frequency of less than or equal to once per 180 days of cumulative power operation, for at least 20 control rods, on a rotating basis, with reactor coolant pressure greater than 800 psig.

Insert 2

Scram time testing with the reactor depressurized is adequate to ensure that the control rod will perform its intended scram function during startup of the plant until scram time testing above 800 psig reactor coolant pressure is performed prior to exceeding 40% power.

Insert 3

1. MCPR shall be checked daily during reactor operation at greater than or equal to 25% rated thermal power.
2. The MCPR operating limit shall be determined within 72 hours of completing scram time testing as required in Specification 4.2.C.

Insert 4

Because the transient analysis takes credit for conservatism in the scram speed performance, it must be demonstrated that the specific scram speed distribution is consistent with that used in the transient analysis. Surveillance 4.10.C.2 determines the actual scram speed distribution which is compared to the assumed distribution. The MCPR operating limit is then determined based either on the applicable limit associated with scram times of Specification 3.2.B.3 or actual scram times. The MCPR operating limit must be determined once within 72 hours after each set of scram time tests required by Surveillance 4.2.C because the effective scram speed distribution may change during the cycle. The 72 hour completion time is acceptable due to the relatively minor changes in scram speed expected during the operating cycle.

4.10 ECCS RELATED CORE LIMITS

Applicability: Applies to the periodic measurement during power operation of core parameters related to ECCS performance.

Objective: To assure that the limits of Section 3.10 are not being violated.

Specification:

A. Average Planar LHGR.

The APLHGR for each type of fuel as a function of average planar exposure shall be checked daily during reactor operation at greater than or equal to 25% rated thermal power.

B. Local LHGR

The LHGR as a function of core height shall be checked daily during reactor operation at greater than or equal to 25% rated thermal power.

C. Minimum Critical Power Ratio (MCPR).

Insert 3

~~MCPR shall be checked daily during reactor operation at greater than or equal to 25% rated thermal power.~~

Bases:

The LHGR shall be checked daily to determine whether fuel burnup or control rod movement has caused changes in power distribution. Since changes due to burnup are slow, and only a few control rods are moved daily, a daily check of power distribution is adequate.

The minimum critical power ratio (MCPR) is unlikely to change significantly during steady state power operation so that 24 hours is an acceptable frequency for surveillance. In the event of a single pump trip, 24 hours surveillance interval remains acceptable because the accompanying power reduction is much larger than the change in MAPLHGR limits for four loop operation at the corresponding lower steady state power level as compared to five loop operation. The 24 hours frequency is also acceptable for the APRM status check since neutron monitoring system failures are infrequent and a downscale failure of either an APRM or LPRM initiates a control rod withdrawal block, thus precluding the possibility of a control rod withdrawal error.

Insert 4

At core power levels less than or equal to 25% rated thermal power the reactor will be operating at or above the minimum recirculation pump speed. For all designated control rod patterns which may be employed at this point, operating plant experience and thermal hydraulic analysis indicate that the resulting APLHGR, LHGR and MCPR values all have considerable margin to the limits of Specification 3.10. Consequently, monitoring of these quantities below 25% of the rated thermal power is not required.

OYSTER CREEK TECHNICAL SPECIFICATION

CHANGE REQUEST No. 322

ENCLOSURE 3

RETYPED TECHNICAL SPECIFICATION PAGES
AND
BASES CHANGE (FOR INFORMATION ONLY)

Retyped TS Pages

4.2-1
4.2-3
4.10-1
4.10-2 (new)

4.2 REACTIVITY CONTROL

Applicability: Applies to the surveillance requirements for reactivity control.

Objective: To verify the capability for controlling reactivity.

Specification:

A. SDM shall be verified:
   1. Prior to each CORE ALTERATION, and
   2. Once within 4 hours following the first criticality following any CORE ALTERATION.

B. The control rod drive housing support system shall be inspected after reassembly.

C. The maximum scram insertion time of the control rods shall be demonstrated through measurement and, during single control rod scram time tests, the control rod drive pumps shall be isolated from the accumulators:

   1. For all control rods prior to thermal power exceeding 40% power with reactor coolant pressure greater than 800 psig, following core alterations or after a reactor shutdown that is greater than 120 days.

   2. For specifically affected individual control rods following maintenance on or modification to the control rod or control rod drive system which could affect the scram insertion time of those specific control rods in accordance with either "a" or "b" as follows:

      a.1 Specifically affected individual control rods shall be scram time tested with the reactor depressurized and the scram insertion time from the fully withdrawn position to 90% insertion shall not exceed 2.2 seconds, and

      a.2 Specifically affected individual control rods shall be scram time tested at greater than 800 psig reactor coolant pressure prior to exceeding 40% power.

      b. Specifically affected individual control rods shall be scram time tested at greater than 800 psig reactor coolant pressure.

   3. On a frequency of less than or equal to once per 180 days of cumulative power operation, for at least 20 control rods, on a rotating basis, with reactor coolant pressure greater than 800 psig.

D. Each partially or fully withdrawn control rod shall be exercised at least once each week. This test shall be performed within 24 hours in the event power operation is continuing with two or more inoperable control rods or in the event power operation is continuing with one fully or partially withdrawn rod which cannot be moved and for which control rod drive mechanism damage has not been ruled out. The surveillance need not be completed within 24 hours if the number of inoperable rods has been reduced to less than two and if it has been demonstrated that control rod drive mechanism collet housing failure is not the cause of an immovable control rod.

BASIS:

Adequate SDM must be demonstrated to ensure that the reactor can be made subcritical from any initial operating condition. Adequate SDM is demonstrated by testing before or during the first startup after fuel movement, control rod replacement, or shuffling within the reactor pressure vessel. Control rod replacement refers to the decoupling and removal of a control rod from a core location, and subsequent replacement with a new control rod or a control rod from another core location. Since core reactivity will vary during the cycle as a function of fuel depletion and poison burnup, the beginning of cycle (BOC) test must also account for changes in core reactivity during the cycle. Therefore, to obtain the SDM, the initial measured value must be increased by an adder, "R", which is the difference between the calculated value of maximum core reactivity during the operating cycle and the calculated BOC core reactivity. If the value of R is negative (that is, BOC is the most reactive point in the cycle), no correction to the BOC measured value is required.

The SDM may be demonstrated during an in sequence control rod withdrawal, in which the highest worth control rod is analytically determined, or during local criticals. Local critical tests require the withdrawal of out of sequence control rods.

The frequency of 4 hours after reaching criticality is allowed to provide a reasonable amount of time to perform the required calculations and have appropriate verification.

During REFUEL MODE, adequate SDM is required to ensure that the reactor does not reach criticality during core alterations. An evaluation of each in vessel fuel movement during fuel loading (including shuffling fuel within the core) shall be performed to ensure adequate SDM is maintained during refueling. This evaluation can be a bounding analyses that demonstrate adequate SDM for the most reactive configurations during the refueling may be performed to demonstrate acceptability of the entire fuel movement sequence. For the SDM demonstrations that rely solely on calculation, additional margin must be added to the SDM limit of 0.38% delta k/k to account for uncertainties in the calculation.

The control rod drive housing support system(2) is not subject to deterioration during operation. However, reassembly must be assured following a partial or complete removal.

The scram insertion times for all control rods(3) will be determined at the time of each refueling outage. The scram times generated at each refueling outage when compared to scram times previously recorded gives a measurement of the functional effects of deterioration for each control rod drive. Scram time testing with the reactor depressurized is adequate to ensure that the control rod will perform its intended scram function during startup of the plant until scram time testing above 800 psig reactor coolant pressure is performed prior to exceeding 40% power.

4.10 ECCS RELATED CORE LIMITS

Applicability: Applies to the periodic measurement during power operation of core parameters related to ECCS performance.

Objective: To assure that the limits of Section 3.10 are not being violated.

Specification:

A. Average Planar LHGR.

The APLHGR for each type of fuel as a function of average planar exposure shall be checked daily during reactor operation at greater than or equal to 25% rated thermal power.

B. Local LHGR.

The LHGR as a function of core height shall be checked daily during reactor operation at greater than or equal to 25% rated thermal power.

C. Minimum Critical Power Ratio (MCPR).

1. MCPR shall be checked daily during reactor operation or greater than or equal to 25% rated thermal power.

2. The MCPR operating limit shall be determined within 72 hours of completing scram time testing as required in Specification 4.2.C.

Bases:

The LHGR shall be checked daily to determine whether fuel burnup or control rod movement has caused changes in power distribution. Since changes due to burnup are slow, and only a few control rods are moved daily, a daily check of power distribution is adequate.

The minimum critical power ratio (MCPR) is unlikely to change significantly during steady state power operation so that 24 hours is an acceptable frequency for surveillance. In the event of a single pump trip, 24 hours surveillance interval remains acceptable because the accompanying power reduction is much larger than the change in MAPLHGR limits for four loop operation at the corresponding lower steady state power level as compared to five loop operation. The 24 hours frequency is also acceptable for the APRM status check since neutron monitoring system failures are infrequent and a downscale failure of either an APRM or LPRM initiates a control rod withdrawal block, thus precluding the possibility of a control rod withdrawal error.

Because the transient analysis takes credit for conservatism in the scram speed performance, it must be demonstrated that the specific scram speed distribution is consistent with that used in the transient analysis. Surveillance 4.10.C.2 determines the actual scram speed distribution which is compared to the assumed distribution. The

MCPR operating limit is then determined based either on the applicable limit associated with scram times of Specification 3.2.B.3 or actual scram times. The MCPR operating limit must be determined once within 72 hours after each set of scram time tests required by Surveillance 4.2.C because the effective scram speed distribution may change during the cycle. The 72 hour completion time is acceptable due to the relatively minor changes in scram speed expected during the operating cycle.

At core power levels less than or equal to 25% rated thermal power the reactor will be operating at or above the minimum recirculation pump speed. For all designated control rod patterns which may be employed at this point, operating plant experience and thermal hydraulic analysis indicate that the resulting APLHGR, LHGR and MCPR values all have considerable margin to the limits of Specification 3.10. Consequently, monitoring of these quantities below 25% of the rated thermal power is not required.