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AmerGen℠
An Exelon Company

10 CFR 50.90

February 27, 2004
2130-04-20011

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. 323 – Relocation of Stability Protection Settings to the Core Operating Limits Report

Reference: NRC Generic Letter 88-16, Removal of Cycle-Specific Parameter Limits from Technical Specifications, dated October 3, 1988

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 Technical Specifications by relocating the Average Power Range Monitor (APRM) based stability protection settings for the Option II stability solution to the Core Operating Limits Report (COLR). These changes are considered to be a cost beneficial burden reduction item. The BWR Owner's Group (BWROG) defined stability Option II solution was implemented at Oyster Creek commencing with Operating Cycle 19, which began on October 27, 2002. The Option II solution demonstrates that existing quadrant-based APRM trip systems will initiate a reactor scram for postulated reactor instability and avoid violating the Minimum Critical Power Ratio (MCPR) safety limit. The Oyster Creek application of the Option II solution was approved by the NRC on October 18, 2002 (TAC No. MB4960). The application, as approved, included the APRM based stability protection settings for the Option II stability solution directly in the Technical Specifications.

Also included are editorial and pagination changes as necessary to accommodate the proposed changes and correction of two typographical errors on Technical Specification page 2.3-4.

The proposed changes would allow Oyster Creek to implement cycle specific changes to the stability protection settings, as necessary, through the standard reload process, eliminating the need for additional license amendments. This conforms to the guidance of NRC Generic Letter 88-16 and is consistent with the application of BWROG defined stability solutions by other U.S. BWRs.

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AmerGen Energy Company, LLC requests approval of these changes by September 30, 2004. This requested approval date is to allow sufficient time to update affected plant procedures and the COLR and provide adequate time to review and approve the COLR prior to Cycle 20 startup. Implementation of this change for Cycle 20 initial startup after the 20R refueling outage will: (1) allow the relocation of the stability protection settings into the COLR, and (2) allow for the revision of the stability protection settings in the COLR, if required, for operating Cycle 20 and future operating cycles as needed. Additionally, stability protection setting changes for future operating cycles could be implemented without the need of a license amendment. Once approved, the amendment shall be implemented within 60 days.

The proposed changes to the Technical Specifications have 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.

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,

02-27-04
Executed On

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

Enclosures: (1) Oyster Creek Technical Specification Change Request No. 323, Evaluation of Proposed Changes
(2) Oyster Creek Technical Specification Change Request No. 323, Markup of Proposed Technical Specification Page Changes
(3) Oyster Creek Technical Specification Change Request No. 323, Proposed Technical Specification Pages

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. 04028

ENCLOSURE 1

Oyster Creek Technical Specification Change Request No. 323

Evaluation of Proposed Changes

1.0 INTRODUCTION

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

The proposed changes would revise the Operating License to relocate the Average Power Range Monitor (APRM) based stability protection settings for protection against reactor instability to the Core Operating Limits Report (COLR). These changes support Cycle 20 operation. NRC approval of these changes is requested by September 30, 2004 in order to allow sufficient time to update affected plant procedures and the COLR and provide adequate time to review and approve the COLR prior to Cycle 20 startup.

The proposed changes would allow Oyster Creek to implement cycle specific changes to the stability protection settings, as necessary, through the standard reload process, eliminating the need for additional license amendments. This conforms to the guidance of NRC Generic Letter 88-16 and is consistent with the application of BWR Owner's Group (BWROG) defined stability solutions by other U.S. BWRs. Additionally, two typographical errors on Technical Specification (TS) page 2.3-4 are corrected. These corrections are purely editorial in nature and have no impact on the technical content of the TS Bases.

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

Revised TS pages: 2.3-1, 2.3-2, 2.3-4, 6-14 and 6-15.

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 2.3.A.1 and TS 2.3.B to identify the COLR as the source for the stability protection settings. The proposed amendment would replace the current TS stability protection setting requirement with a reference to the COLR for stability protection settings. In addition, TS 6.9.1.f. would be revised to require the stability protection settings be included in the COLR and add associated references to the stability licensing basis documents. Also, two typographical errors on TS page 2.3-4 are corrected. These corrections are purely editorial in nature and have no impact on the technical content of the TS Bases.

3.0 BACKGROUND

The BWROG defined stability Option II solution was implemented at Oyster Creek commencing with Operating Cycle 19. The Option II solution demonstrates that existing quadrant-based APRM trip systems will initiate a reactor scram for postulated reactor instability and avoid violating the Minimum Critical Power Ratio (MCPR) safety limit. The Oyster Creek application of the Option II solution was approved by the USNRC on October 18, 2002 (TAC No. MB4960). The application, as approved, included the APRM based stability protection settings for protection against reactor instability directly in the Technical Specifications.

Plant-specific analysis for Oyster Creek Cycle 19 using the Option II solution (Ref. 1) established APRM flow biased neutron flux scram and rod block settings. These settings for protection against reactor instability are cycle-specific. The Reference 1 report also identified a reload evaluation basis for reviewing the applicability of these settings for future reload cores. Reload cores are evaluated against specified criteria to determine if the existing stability protection settings remain bounding or if revised settings are required. Currently, if revised settings are determined to be required, a license amendment would be necessary to implement the revised settings.

The proposed changes would revise the TS to relocate the APRM based stability protection settings for protection against reactor instability to the COLR. These changes conform to the guidance of Generic Letter 88-16 (Ref. 2) and are consistent with the location of stability protection settings for other U.S. BWRs utilizing BWROG defined stability long-term solutions.

4.0 REGULATORY REQUIREMENTS & GUIDANCE

10 CFR 50, Appendix A, General Design Criteria (GDC) 10 requires that the reactor core and associated coolant, control, and protection systems 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 occurrences. 10 CFR 50, Appendix A, GDC 12, requires that the reactor core and associated coolant, control, and protection systems be designed to assure that power oscillations which can result in conditions exceeding specified acceptable fuel design limits are not possible or can be reliably and readily detected and suppressed.

The BWROG has developed several stability long-term solutions that meet the requirements of 10 CFR 50, Appendix A, GDC 10 and 12. The Option II solution approved for use at Oyster Creek (TAC No. MB4960) demonstrates that existing quadrant-based APRM trip systems will initiate a reactor scram for a postulated reactor instability and avoid violating the MCPR safety limit. The quadrant-based APRM system is unique to BWR/2 (e.g., Oyster Creek) designs in that Local Power Range Monitor (LPRM) instrument assignments to the APRMs are arranged in separate quadrants of the reactor. Thus, BWR/2s would have a substantial APRM response to a postulated reactor instability, which oscillates in either an in-phase (core wide) or out-of-phase (regional) oscillation mode.

NRC Generic Letter 88-16 (Ref. 2) provides guidance to Licensees for the preparation of license amendment requests to modify TS that have cycle-specific parameter limits. The guidance provides for the relocation of cycle-specific parameter limits to a named formal report that includes the values of cycle-specific parameter limits that have been established using NRC-approved methodology and consistent with all applicable limits in the safety analysis. The Oyster Creek TS specifically identify the COLR as the source for cycle-specific limits.

5.0 TECHNICAL ANALYSIS

The BWROG defined several stability long-term solutions which meet the GDCs stated above. The Option II solution approved for use at Oyster Creek (TAC No. MB4960) demonstrates that existing quadrant-based APRM trip systems will initiate a reactor

scram for a postulated reactor instability and avoid violating the MCPR safety limit. NEDC-33065P, "Application of Stability Long-Term Solution Option II to Oyster Creek" (Ref. 1) provides a demonstration of the application of Option II methodology at Oyster Creek.

Relocation of the stability protection settings reduces the regulatory burden of both the utility and the USNRC when changes to the stability protection settings are required. The proposed changes to relocate the BWROG Stability Analysis Solution Option II stability protection settings from the TS to the COLR will continue to provide MCPR safety limit protection in compliance with GDC 10 and 12. The previously approved Oyster Creek specific application of BWROG Stability Analysis Solution Option II (Ref. 1) will continue to be the basis of the stability protection settings. Consequently, the proposed TS changes will not adversely affect nuclear safety or safe plant operations.

6.0 REGULATORY ANALYSIS

10 CFR 50, Appendix A, GDC 10 requires that the reactor core and associated coolant, control, and protection systems 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 occurrences. 10 CFR 50, Appendix A, GDC 12, requires that the reactor core and associated coolant, control, and protection systems be designed to assure that power oscillations which can result in conditions exceeding specified acceptable fuel design limits are not possible or can be reliably and readily detected and suppressed.

The BWR Owner's Group (BWROG) defined stability Option II solution was implemented at Oyster Creek commencing with Operating Cycle 19. The Option II solution demonstrates that existing quadrant-based APRM trip systems will initiate a reactor scram for a postulated reactor instability and avoid violating the MCPR safety limit in accordance with the requirements of 10 CFR 50, Appendix A, GDC 10 and 12.

Furthermore, relocation of the BWROG Stability Analysis Solution Option II stability protection settings from the TS to the COLR will continue to provide MCPR safety limit protection in compliance with GDC 10 and GDC 12.

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," as 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 changes will relocate the Average Power Range Monitor (APRM) based stability protection settings for the Option II stability solution from the Technical Specifications (TS) to the Core Operating Limits Report (COLR). The APRM based stability protection settings are not an initiator or a precursor to an accident. Furthermore, changes to the stability protection settings do not physically modify or change the function, or system interfaces, of the APRM Neutron Flux Scram and Neutron Flux Control Rod Block systems or components. The APRM based stability protection settings provide automatic protection to assure that anticipated coupled neutronic/thermal-hydraulic instabilities will not compromise established fuel safety limits. The proposed TS changes cannot increase the consequences of a previously evaluated accident because the changes do not alter any Limiting Safety System Setting, but only relocate the applicable stability protection settings to the COLR. The applicable stability protection settings will continue to be determined by an NRC approved methodology.

Therefore, the proposed changes do 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 changes will relocate the APRM based stability protection settings for the Option II stability solution from the TS to the COLR. The APRM based stability protection settings for the Option II stability solution assure anticipated coupled neutronic/thermal-hydraulic instabilities will not compromise established fuel safety limits. These changes do not introduce any new accident precursors and do not involve any alterations to plant configurations which could initiate a new or different kind of accident. The proposed changes do not affect the intended function of the APRM system nor do they affect the operation of the system in a way which would create a new or different kind of accident.

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

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

Response: No.

The proposed change will relocate the APRM based stability protection settings for the Option II stability solution from the TS to the COLR. The APRM based stability protection settings for protection against reactor instability assure anticipated coupled neutronic/thermal-hydraulic instabilities will not compromise established fuel safety limits. No fuel thermal limits or other design and licensing basis acceptance criteria are adversely affected. No other events are adversely affected. The margin of safety, as defined in the TS, for all events is maintained.

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

Based on the above, AmerGen Energy Company, LLC (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 changes would revise the TS to relocate the APRM based stability protection settings for the Option II stability solution to the COLR. These changes conform to the guidance of Generic Letter 88-16 (Ref. 2) and are consistent with the location of stability protection settings in Specification 3.2.4 of the BWR/4 Standard Technical Specifications (NUREG-1433, Rev. 2).

10.0 REFERENCES

1) NEDC-33065P, Rev. 0, "Application of Stability Long-Term Solution Option II to Oyster Creek," dated April 2002.

2) NRC Generic Letter 88-16, "Removal of Cycle-Specific Parameter Limits from Technical Specifications," October 3, 1988

ENCLOSURE 2

MARKUP OF PROPOSED TECHNICAL SPECIFICATION PAGE CHANGES

Revised TS Pages

2.3-1
2.3-2
2.3-4
6-14
6-15

2.3 LIMITING SAFETY SYSTEM SETTINGS

Applicability: Applies to trip settings on automatic protective devices related to variables on which safety limits have been placed.

Objective: To provide automatic corrective action to prevent the safety limits from being exceeded.

Specification: Limiting safety system settings shall be as follows:

FUNCTION		LIMITING SAFETY SYSTEM SETTINGS
A.	Neutron Flux, Scram	
A.1	APRM	When the reactor mode switch is in the Run position, the APRM flux scram setting shall be the minimum of:

For $W \geq 0.0 \times 10^6$ lb / hr:

$$S \leq \left[(0.90 \times 10^{-6})\, W + 65.1\right] \frac{FRP}{MFLPD} \text{ ; or}$$

The applicable stability protection settings, as defined in the COLR

~~For W ≤ 27.5 x 10⁶ lb/ hr:~~

~~S ≤ (0.98 x 10⁻⁶) W + 41.4~~

with a maximum setpoint of 120.0% for core flow equal to 61 x 10^6 lb/hr and greater,

where:

S = setting in percent of rated power
W = recirculation flow (lb/hr)

FRP = fraction of rated thermal power is the ratio of core thermal power to rated thermal power

MFLPD = maximum fraction of limiting power density where the limiting power density for each bundle is the design linear heat generation rate for that bundle.

The ratio of FRP/MFLPD shall be set equal to 1.0 unless the actual operating value is less than 1.0 in which case the actual operating value will be used.

This adjustment may be accomplished by increasing the APRM gain and thus reducing the flow reference APRM High Flux Scram Curve by the reciprocal of the APRM gain change.

A.2	IRM	≤ 38.4 percent of rated neutron flux
A.3	APRM Downscale	≥ 2% Rated Thermal Power coincident with IRM Upscale (high-high) or Inoperative

	FUNCTION	LIMITING SAFETY SYSTEM SETTINGS
B.	Neutron Flux, Control Rod Block	The Rod Block setting shall be the minimum of:

For $W \geq 0.0 \times 10^6$ lb / hr:

$$S \leq \left[(0.90 \times 10^{-6})\, W + 60.1\right] \frac{FRP}{MFLPD} \quad ; \text{ or}$$

The applicable stability protection settings, as defined in the COLR

~~For $W \leq 27.5 \times 10^6$ lb / hr:~~

~~$S \leq (0.98 \times 10^{-6})\, W + 34.1$~~

with a maximum setpoint of 115.0% for core flow equal to 61×10^6 lb/hr and greater.

The definitions of S, W, FRP and MFLPD used above for the APRM scram trip apply.

The ratio of FRP to MFLPD shall be set equal to 1.0 unless the actual operating value is less than 1.0, in which case the actual operating value will be used.

This adjustment may be accomplished by increasing the APRM gain and thus reducing the flow referenced APRM rod block curve by the reciprocal of the APRM gain change.

C.	Reactor High Pressure, Scram	≤1060 psig
D.	Reactor High Pressure, Relief Valves Initiation	2 @ ≤ 1085 psig 3 @ ≤ 1105 psig
E.	Reactor High Pressure, Isolation Condenser Initiation	≤ 1060 psig with time delay ≤ 3 seconds
F.	Reactor High Pressure, Safety Valve Initiation	4 @ 1212 psig ±12 psi 5 @ 1221 psig ±12 psi
G.	Low Pressure Main Steam MSIV Closure	≥ 825 psig (initiated in IRM Line, range 10)
H.	Main Steam Line Isolation Valve Closure, Scram	≤10% Valve Closure from full open

2.3 LIMITING SAFETY SYSTEM SETTINGS

Bases:

Safety limits have been established in Specifications 2.1 and 2.2 to protect the integrity of the fuel cladding and reactor coolant system barriers, respectively. Automatic protective devices have been provided in the plant design for corrective actions to prevent the safety limits from being exceeded in normal operation or operational transients caused by reasonably expected single operator error or equipment malfunction. This Specification establishes the trip settings for these automatic protection devices.

The Average Power Range Monitor, APRM[(1)], trip setting has been established to assure never reaching the fuel cladding integrity safety limit. The APRM system responds to changes in neutron flux. However, near the rated thermal power, the APRM is calibrated using a plant heat balance, so that the neutron flux that is sensed is read out as percent of the rated thermal power. For slow maneuvers, such as those where core thermal power, surface heat flux, and the power transferred to the water follow the neutron flux, the APRM will read reactor thermal power. For fast transients, the neutron flux will lead the power transferred from the cladding to the water due to the effect of the fuel time constant. Therefore, when the ~~neutron~~ neutron flux increases to the scram setting, the percent increase in heat flux and power transferred to the water will be less than the percent increase in neutron flux.

The APRM trip setting will be varied automatically with recirculation flow, with the trip setting at the rated flow of 61.0×10^6 lb/hr or greater being 120.0% of rated neutron flux. Based on a complete evaluation of the reactor dynamic performance during normal operation as well as expected maneuvers and the various mechanical failures, it was concluded that sufficient protection is provided by the simple fixed scram setting (2,3). However, in response to expressed beliefs (4) that variation of APRM flux scram with recirculation flow is a prudent measure to ensure safe plant operation, the scram setting will be varied with recirculation flow.

An increase in the APRM scram trip setting would decrease the margin present before the fuel cladding integrity safety limit is reached. The APRM scram trip setting was determined by an analysis of margins required to provide a reasonable range for maneuvering during operation. Reducing this operating margin would increase the frequency of spurious scrams, which could have an adverse effect on reactor safety because of the resulting thermal stresses and the unnecessary challenge to the operators. Thus, the APRM scram trip setting was selected because it provides adequate margin for the fuel cladding integrity safety limit and yet allows operating margin that reduces the possibility of unnecessary scrams.

The scram trip setting must be adjusted to ensure that the LHGR transient peak is not increased for any combination of maximum fraction of limiting power density (MFLPD) and reactor core thermal power. The scram setting is adjusted in accordance with the formula in Specification 2.3.A, when the MFLPD is greater than the fraction of the rated power (FRP). The adjustment may be accomplished by increasing the APRM gain and thus reducing the flow referenced APRM High Flux Scram Curve by the reciprocal of the APRM gain change.

d. Annual Radioactive Effluent Release Report

The Annual Radioactive Effluent Release Report covering the operations of the unit during the previous 12 months of operation shall be submitted within 60 days after January 1, each year.

The Report shall include a summary of the quantities of radioactive liquid and gaseous effluent and solid waste released from the unit. The material provided shall be: (1) consistent with the objectives outlined in the ODCM and PCP; and, (2) in conformance with 10 CFR 50.36(a) and Section IV.B.1 of Appendix I to 10 CFR Part 50.

e. Annual Radiological Environmental Operating Report

The Annual Radiological Environmental Operating Report covering the operation of the unit during the previous calendar year shall be submitted prior to May 1 of each year.

The Report shall include summaries, interpretations, and an analysis of trends of the results of the Radiological Environmental Monitoring Program for the reporting period. The material provided shall be consistent with the objectives outlined in: (1) the ODCM; and, (2) Sections IV.B.2, IV.B.3, and IV.C of Appendix I to 10 CFR Part 50.

f. CORE OPERATING LIMITS REPORT (COLR)

1. Core operating limits shall be established prior to each reload cycle, or prior to any remaining portion of a reload cycle for the following:

   a. The AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR) for Specification 3.10.A

   b. The K_f core flow adjustment factor for Specification 3.10.C.

   c. The MINIMUM CRITICAL POWER RATIO (MCPR) for Specification 3.10.C

   d. The LOCAL LINEAR HEAT GENERATION RATE (LLHGR) for Specification 3.10.B.

   e. The Average Power Range Monitor (APRM) stability protection settings for Specifications 2.3.A.1 and 2.3.B

   and shall be documented in the COLR.

2. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents.

   a. GPU Nuclear (GPUN) Topical Report (TR) 020, Methods for the Analysis of Boiling Water Reactors Lattice Physics, (The approved revision at the time reload analyses are performed shall be identified in the COLR.)

   b. GPUN TR 021, Methods for the Analysis of Boiling Water Reactors Steady State Physics, (The approved revision at the time reload analyses are performed shall be identified in the COLR.)

c. GPUN TR 033, Methods for the Generation of Core Kinetics Data for RETRAN-02, (The approved revision at the time reload analyses are performed shall be identified in the COLR.)

d. GPUN TR 040, Steady-State and Quasi-Steady-State Methods Used in the Analysis of Accidents and Transients, (The approved revision at the time reload analyses are performed shall be identified in the COLR.)

e. GPUN TR 045, BWR-2 Transient Analysis Model Using the Retran Code, (The approved revision at the time reload analyses are performed shall be identified in the COLR.)

f. NEDE-31462P and NEDE-31462, Oyster Creek Nuclear Generating Station SAFER/CORECOOL/GESTR-LOCA Loss-of-Coolant Accident Analysis, (The approved revision at the time reload analyses are performed shall be identified in the COLR.)

g. NEDE-24011-P-A, General Electric Standard Application for Reactor Fuel, (GESTAR II) (The approved revision at the time reload analyses are performed shall be identified in the COLR.)

h. DELETED

i. XN-75-55-(A); XN-75-55, Supplement 1-(A); XN-75-55, Supplement 2-(A), Revision 2, "Exxon Nuclear Company WREM-Based NJP-BWR ECCS Evaluation Model and Application to the Oyster Creek Plant," April 1977

j. XN-75-36(NP)-(A); XN-75-36(NP), Supplement 1-(A), "Spray Cooling Heat Transfer Phase Test Results, ENC- 8x8 BWR Fuel 60 and 63 Active Rods, Interim Report," October 1975

k. NEDC-33065P, Rev. 0, "Application of Stability Long-Term Solution Option II for Oyster Creek", April 2002.

3. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal-mechanical limits, core thermal-hydraulic limits, ECCS limits, nuclear limits such as shutdown margin, transient analysis limits, and accident analysis limits) of the safety analysis are met.

4. The CORE OPERATING LIMITS REPORT, including any mid-cycle revisions or supplements shall be provided, upon issuance for each reload cycle, to the NRC Document Control Desk with copies to the Regional Administrator and Resident Inspector.

Basis: 6.9.1.e - RELOCATED TO THE ODCM.

6.9.2 REPORTABLE EVENTS

The submittal of Licensee Event Reports shall be accomplished in accordance with the requirements set forth in 10 CFR 50.73.

ENCLOSURE 3

RETYPED PAGES FOR
TECHNICAL SPECIFICATION CHANGE

Retyped TS Pages

2.3-1
2.3-2
2.3-4
6-14
6-14a (new)
6-15

2.3 LIMITING SAFETY SYSTEM SETTINGS

Applicability: Applies to trip settings on automatic protective devices related to variables on which safety limits have been placed.

Objective: To provide automatic corrective action to prevent the safety limits from being exceeded.

Specification: Limiting safety system settings shall be as follows:

	FUNCTION	LIMITING SAFETY SYSTEM SETTINGS
A.	Neutron Flux, Scram	
A.1	APRM	When the reactor mode switch is in the Run position, the APRM flux scram setting shall be the minimum of:

For $W \geq 0.0 \times 10^6$ lb / hr:

$$S \leq \left[(0.90 \times 10^{-6})\, W + 65.1\right] \frac{FRP}{MFLPD} \quad ; \text{ or}$$

The applicable stability protection settings, as defined in the COLR,

with a maximum setpoint of 120.0% for core flow equal to 61×10^6 lb/hr and greater,

where:

S = setting in percent of rated power
W = recirculation flow (lb/hr)

FRP = fraction of rated thermal power is the ratio of core thermal power to rated thermal power

MFLPD = maximum fraction of limiting power density where the limiting power density for each bundle is the design linear heat generation rate for that bundle.

The ratio of FRP/MFLPD shall be set equal to 1.0 unless the actual operating value is less than 1.0 in which case the actual operating value will be used.

This adjustment may be accomplished by increasing the APRM gain and thus reducing the flow reference APRM High Flux Scram Curve by the reciprocal of the APRM gain change.

A.2	IRM	≤ 38.4 percent of rated neutron flux
A.3	APRM Downscale	≥ 2% Rated Thermal Power coincident with IRM Upscale (high-high) or Inoperative

	FUNCTION	LIMITING SAFETY SYSTEM SETTINGS
B.	Neutron Flux, Control Rod Block	The Rod Block setting shall be the minimum of: For $W \geq 0.0 \times 10^6$ lb / hr: $S \leq [(0.90 \times 10^{-6}) W + 60.1] \frac{FRP}{MFLPD}$; or The applicable stability protection settings, as defined in the COLR, with a maximum setpoint of 115.0% for core flow equal to 61×10^6 lb/hr and greater. The definitions of S, W, FRP and MFLPD used above for the APRM scram trip apply. The ratio of FRP to MFLPD shall be set equal to 1.0 unless the actual operating value is less than 1.0, in which case the actual operating value will be used. This adjustment may be accomplished by increasing the APRM gain and thus reducing the flow referenced APRM rod block curve by the reciprocal of the APRM gain change.
C.	Reactor High Pressure, Scram	≤1060 psig
D.	Reactor High Pressure, Relief Valves Initiation	2 @ ≤ 1085 psig 3 @ ≤ 1105 psig
E.	Reactor High Pressure, Isolation Condenser Initiation	≤ 1060 psig with time delay ≤ 3 seconds
F.	Reactor High Pressure, Safety Valve Initiation	4 @ 1212 psig ±12 psi 5 @ 1221 psig ±12 psi
G.	Low Pressure Main Steam MSIV Closure	≥ 825 psig (initiated in IRM Line, range 10)
H.	Main Steam Line Isolation Valve Closure, Scram	≤10% Valve Closure from full open

2.3 LIMITING SAFETY SYSTEM SETTINGS

Bases:

Safety limits have been established in Specifications 2.1 and 2.2 to protect the integrity of the fuel cladding and reactor coolant system barriers, respectively. Automatic protective devices have been provided in the plant design for corrective actions to prevent the safety limits from being exceeded in normal operation or operational transients caused by reasonably expected single operator error or equipment malfunction. This Specification establishes the trip settings for these automatic protection devices.

The Average Power Range Monitor, APRM[1], trip setting has been established to assure never reaching the fuel cladding integrity safety limit. The APRM system responds to changes in neutron flux. However, near the rated thermal power, the APRM is calibrated using a plant heat balance, so that the neutron flux that is sensed is read out as percent of the rated thermal power. For slow maneuvers, such as those where core thermal power, surface heat flux, and the power transferred to the water follow the neutron flux, the APRM will read reactor thermal power. For fast transients, the neutron flux will lead the power transferred from the cladding to the water due to the effect of the fuel time constant. Therefore, when the neutron flux increases to the scram setting, the percent increase in heat flux and power transferred to the water will be less than the percent increase in neutron flux.

The APRM trip setting will be varied automatically with recirculation flow, with the trip setting at the rated flow of 61.0×10^6 lb/hr or greater being 120.0% of rated neutron flux. Based on a complete evaluation of the reactor dynamic performance during normal operation as well as expected maneuvers and the various mechanical failures, it was concluded that sufficient protection is provided by the simple fixed scram setting (2,3). However, in response to expressed beliefs (4) that variation of APRM flux scram with recirculation flow is a prudent measure to ensure safe plant operation, the scram setting will be varied with recirculation flow.

An increase in the APRM scram trip setting would decrease the margin present before the fuel cladding integrity safety limit is reached. The APRM scram trip setting was determined by an analysis of margins required to provide a reasonable range for maneuvering during operation. Reducing this operating margin would increase the frequency of spurious scrams, which could have an adverse effect on reactor safety because of the resulting thermal stresses and the unnecessary challenge to the operators. Thus, the APRM scram trip setting was selected because it provides adequate margin for the fuel cladding integrity safety limit and yet allows operating margin that reduces the possibility of unnecessary scrams.

The scram trip setting must be adjusted to ensure that the LHGR transient peak is not increased for any combination of maximum fraction of limiting power density (MFLPD) and reactor core thermal power. The scram setting is adjusted in accordance with the formula in Specification 2.3.A, when the MFLPD is greater than the fraction of the rated power (FRP). The adjustment may be accomplished by increasing the APRM gain and thus reducing the flow referenced APRM High Flux Scram Curve by the reciprocal of the APRM gain change.

d. Annual Radioactive Effluent Release Report

The Annual Radioactive Effluent Release Report covering the operations of the unit during the previous 12 months of operation shall be submitted within 60 days after January 1, each year.

The Report shall include a summary of the quantities of radioactive liquid and gaseous effluent and solid waste released from the unit. The material provided shall be: (1) consistent with the objectives outlined in the ODCM and (2) PCP; and, (2) in conformance with 10 CFR 50.36(a) and Section IV.B.1 of Appendix I to 10 CFR Part 50.

e. Annual Radiological Environmental Operating Report

The Annual Radiological Environmental Operating Report covering the operation of the unit during the previous calendar year shall be submitted prior to May 1 of each year.

The Report shall include summaries, interpretations, and an analysis of trends of the results of the Radiological Environmental Monitoring Program for the reporting period. The material provided shall be consistent with the objectives outlined in: (1) the ODCM; and, (2) Sections IV.B.2, IV.B.3, and IV.C of Appendix I to 10 CFR Part 50.

f. CORE OPERATING LIMITS REPORT (COLR)

1. Core operating limits shall be established prior to each reload cycle, or prior to any remaining portion of a reload cycle for the following:

   a. The AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR) for Specification 3.10.A

   b. The K_f core flow adjustment factor for Specification 3.10.C.

   c. The MINIMUM CRITICAL POWER RATIO (MCPR) for Specification 3.10.C.

   d. The LOCAL LINEAR HEAT GENERATION RATE (LLHGR) for Specification 3.10.B.

   e. The Average Power Range Monitor (APRM) stability protection settings for Specifications 2.3.A.1 and 2.3.B.

   and shall be documented in the COLR.

2. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents.

   a. GPU Nuclear (GPUN) Topical Report (TR) 020, Methods for the Analysis of Boiling Water Reactors Lattice Physics, (The approved revision at the time reload analyses are performed shall be identified in the COLR.)

   b. GPUN TR 021, Methods for the Analysis of Boiling Water Reactors Steady State Physics, (The approved revision at the time reload analyses are performed shall be identified in the COLR.)

c. GPUN TR 033, Methods for the Generation of Core Kinetics Data for RETRAN-02, (The approved revision at the time reload analyses are performed shall be identified in the COLR.)

d. GPUN TR 040, Steady-State and Quasi-Steady-State Methods Used in the Analysis of Accidents and Transients, (The approved revision at the time reload analyses are performed shall be identified in the COLR.)

e. GPUN TR 045, BWR-2 Transient Analysis Model Using the Retran Code, (The approved revision at the time reload analyses are performed shall be identified in the COLR.)

f. NEDE-31462P and NEDE-31462, Oyster Creek Nuclear Generating Station SAFER/CORECOOL/GESTR-LOCA Loss-of-Coolant Accident Analysis, (The approved revision at the time reload analyses are performed shall be identified in the COLR.)

g. NEDE-24011-P-A, General Electric Standard Application for Reactor Fuel, (GESTAR II) (The approved revision at the time reload analyses are performed shall be identified in the COLR.)

h. DELETED

i. XN-75-55-(A); XN-75-55, Supplement 1-(A); XN-75-55, Supplement 2-(A), Revision 2, "Exxon Nuclear Company WREM-Based NJP-BWR ECCS Evaluation Model and Application to the Oyster Creek Plant," April 1977

j. XN-75-36(NP)-(A); XN-75-36(NP), Supplement 1-(A), "Spray Cooling Heat Transfer Phase Test Results, ENC- 8x8 BWR Fuel 60 and 63 Active Rods, Interim Report," October 1975

k. NEDC-33065P, Rev. 0, "Application of Stability Long-Term Solution Option II for Oyster Creek," April 2002.

3. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal-mechanical limits, core thermal-hydraulic limits, ECCS limits, nuclear limits such as shutdown margin, transient analysis limits, and accident analysis limits) of the safety analysis are met.

4. The CORE OPERATING LIMITS REPORT, including any mid-cycle revisions or supplements shall be provided, upon issuance for each reload cycle, to the NRC Document Control Desk with copies to the Regional Administrator and Resident Inspector.

Basis: 6.9.1.e - RELOCATED TO THE ODCM.

6.9.2 REPORTABLE EVENTS

The submittal of Licensee Event Reports shall be accomplished in accordance with the requirements set forth in 10 CFR 50.73.