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10CFR50.90

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June 18, 2001

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

Clinton Power Station, Unit 1
Facility Operating License No. NPF-62
NRC Docket No. 50-461

Subject: Request for License Amendment for Extended Power Uprate Operation

References:
(1) General Electric Company Licensing Topical Report, "Generic Guidelines for General Electric Boiling Water Reactor Extended Power Uprate," NEDC-32424P-A, Class III, February 1999.
(2) General Electric Company Licensing Topical Report, "Generic Evaluations of General Electric Boiling Water Reactor Extended Power Uprate, NEDC-32523P-A, Class III, February 2000, and Supplement 1, Volumes I and II.
(3) Letter from D. M. Crutchfield (U.S. NRC) to G. L. Sozzi (General Electric), "Staff Position Concerning General Electric Boiling-Water Reactor Extended Power Uprate Program," dated February 8, 1996.
(4) Letter from T. H. Essig (U.S.NRC) to J. F. Quirk (General Electric), "Staff Safety Evaluation of General Electric Boiling Water Reactor (BWR) Extended Power Uprate Generic Analyses," dated September 14, 1998.
(5) Letter from T. Kim (U.S.) NRC to R. O. Anderson (Northern States Power), "Issuance of Amendment Re: Power Uprate Program," dated September 16, 1998.
(6) Letter from L. Olshan (U.S. NRC) to H. L. Sumner, Jr. (Southern Nuclear Operating Company), "Issuance of Amendments - Edwin I. Hatch Nuclear Plant, Units 1 and 2," dated October 22, 1998.

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," AmerGen Energy Company, LLC (i.e., AmerGen) requests changes to the Facility Operating License No. NPF-62 and Appendix A to the Facility Operating License, the Technical Specifications (TS), for Clinton Power Station (CPS). The proposed

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changes will allow CPS to operate at a power level of 3473 megawatts thermal (MWt). This represents an increase of approximately 20 percent rated core thermal power over the current 100 percent power level of 2894 MWt. The operational goal of these proposed changes is to increase electrical generating capacity. The effects of a power uprate at CPS have been comprehensively evaluated and we have concluded that sufficient safety and design margins exists such that an increase in rated core thermal power can be accomplished without adverse impact on the health and safety of the public and without significant impact on the environment. Specifically, the proposed changes follow the generic guidelines for uprating the power of Boiling Water Reactors (BWRs) described in References 1 and 2 and approved by the NRC in References 3 and 4. The proposed changes are similar in part to changes approved for Monticello Nuclear Generating Plant and Edwin I. Hatch Nuclear Plant in References 5 and 6.

Outage-related modifications to support the implementation of these proposed changes will be made during the next two planned refueling outages. Other modifications will be implemented prior to operating at uprate conditions. AmerGen is requesting approval and plans to implement extended power uprate prior to the startup following the next refueling outage, scheduled to begin on March 23, 2002.

This request is subdivided as follows.

1. Attachment A contains a detailed description of the proposed changes necessary for operation at uprated conditions and the technical and safety bases for these changes.

2. Attachment B includes the proposed markups to the Operating License and the TS.

3. Attachment C provides the information supporting a finding of no significant hazards consideration in accordance with 10 CFR 50.92, "Issuance of Amendment," paragraph (c).

4. Attachment D provides the information supporting an Environmental Assessment.

5. Attachment E contains the detailed plant-specific safety analysis described by the generic guidelines. This enclosure contains proprietary information and we request that it be withheld from public disclosure in accordance with 10 CFR 2.790, "Public Inspections, Exemptions, Requests for Withholding," paragraph (a) (4).

6. Attachment F contains the affidavit supporting the request for withholding Attachment E from public disclosure, as requested by 10 CFR 2.790, paragraph (b)(1).

7. Attachment G describes the plant modifications necessary to implement these proposed changes.

The proposed changes have been reviewed by the CPS Plant Operations Review Committee and approved by the Nuclear Safety Review Board.

AmerGen is notifying the State of Illinois of this license amendment request by transmitting a copy of this letter and its attachments to the designated State Official.

Should you have any questions concerning this letter, please contact Mr. T. A. Byam at (630) 663-7266.

Respectfully,

J. M. Heffley
Vice President
Clinton Power Station

Attachments

Affidavit
Attachment A: Description and Safety Analysis for Proposed Changes
Attachment B: Marked-up Operating License and TS Pages for Proposed Changes
Attachment C: Information Supporting a Finding of No Significant Hazards Consideration
Attachment D: Information Supporting An Environmental Assessment
Attachment E: GE Report NEDC-32989P, "Safety Analysis Report for Clinton Power Station Extended Power Uprate," June 2001 (Proprietary)
Attachment F: GE Affidavit for withholding NEDC-32989P from public disclosure
Attachment G: Plant Modifications Required to Support Power Uprate

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Clinton Power Station
Office of Nuclear Facility Safety – Illinois Department of Nuclear Safety

STATE OF ILLINOIS	)		
COUNTY OF DEWITT	)		
IN THE MATTER OF	)		
AMERGEN ENERGY COMPANY, LLC	)	**Docket Number**	
CLINTON POWER STATION, UNIT 1	)	**50-461**	

SUBJECT: **Request for License Amendment for Power Uprate Operation**

AFFIDAVIT

I affirm that the content of this transmittal is true and correct to the best of my knowledge, information and belief.

" OFFICIAL SEAL "
Jacqueline S. Matthias
Notary Public, State of Illinois
My Commission Expires 11/24/2001

J. M. Heffley
Vice President
Clinton Power Station

Subscribed and sworn to before me, a Notary Public in and

for the State above named, this 18th day of

June, 2001.

Jacqueline S. Matthias
Notary Public

**DESCRIPTION AND SAFETY ANALYSIS
FOR PROPOSED CHANGES**

A. SUMMARY OF THE PROPOSED CHANGES

In accordance with 10CFR 50.90, "Application for amendment of license or construction permit," AmerGen Energy Company, LLC (i.e., AmerGen) proposes changes to the Facility Operating License No. NPF-62 and Appendix A to the Facility Operating License, the Technical Specifications (TS), for Clinton Power Station (CPS). Specifically, the proposed Operating License and TS changes support an extended power uprate (EPU) for CPS.

CPS is a General Electric (GE) Boiling Water Reactor (BWR)/6 with a Mark III containment. Because of the significant economic advantages of operating at higher power levels, AmerGen is proposing permanent changes to the Operating License to enable CPS to operate at a power level of 3473 megawatts thermal (MWt). This represents an increase of approximately 20 percent rated core thermal power over the current 100 percent power level of 2894 MWt.

The analyses and evaluations supporting the proposed changes directly related to EPU were completed using the guidelines in GE Licensing Topical Report (LTR), NEDC-32424P-A, "Generic Guidelines for General Electric Boiling Water Reactor Extended Power Uprate" (Reference 1). Certain issues are evaluated generically and have been submitted to the NRC in GE LTR, NEDC-32523P-A, "Generic Evaluations of General Electric Boiling Water Reactor Extended Power Uprate" (Reference 2). The NRC has approved both of these topical reports, in References 3 and 4, respectively.

The planned approach to achieving the higher power level consists of an increase in the core thermal power with a more uniform power distribution to create increased steam flow, a corresponding increase in the feedwater system flow, no increase in maximum core flow, and reactor operation primarily along the Maximum Extended Load Line Limit Analysis (MELLLA) rod/flow control lines. This approach is based on, and is consistent with, the NRC-approved BWR generic EPU guidelines that are presented in Reference 1.

The detailed analysis is presented in GE Report NEDC-32989P, "Safety Analysis Report for Clinton Power Station Extended Power Uprate," dated June 2001 provided in Attachment E, which supports these proposed changes. Attachment E demonstrates that CPS can safely operate at the requested licensed power level of 3473 MWt. The proposed licensed power level of 3473 MWt was chosen based on the following considerations. First, this power level corresponds to a power level increase supported, in part, by previously NRC approved generic LTRs. These LTRs provide a licensing methodology and generic evaluation that supports uprated plant operations to 120% original licensed thermal power. Second, this power level coincides with conditions within which the Nuclear Steam Supply System components and systems do not typically require modification or replacement in order to support plant safety performance requirements.

The proposed changes are described in Section E of this attachment. The marked-up Operating License and TS pages are shown in Attachment B.

B. DESCRIPTION OF THE CURRENT REQUIREMENTS

B.1. Operating License Maximum Power Level

Condition 2.C(1) of the current Operating License for CPS states that "AmerGen Energy Company, LLC is authorized to operate the facility at reactor core power levels not in excess of 2894 megawatts thermal (100 percent rated power) in accordance with the conditions specified herein."

B.2. TS Definition of Rated Thermal Power

TS Section 1.1, "Definitions," defines Rated Thermal Power (RTP) as follows. "RTP shall be a total reactor core heat transfer rate to the reactor coolant of 2894 MWt."

B.3 TS Section 2.1.1, "Reactor Core SLs"

TS Section 2.1.1.1 requires that when the reactor steam dome pressure < 785 psig or core flow < 10% rated core flow, thermal power shall be ≤ 25% RTP.

B.4 TS Section 3.1.3, "Control Rod OPERABILITY"

The Note preceding TS Section 3.1.3, Condition D clarifies that the requirements to "restore compliance with banked position withdrawal sequence (BPWS)" and "restore control rod operability" are not applicable when > 20% RTP since the BPWS is not required to be followed under these conditions.

B.5 TS Section 3.1.6, "Control Rod Pattern"

TS Section 3.1.6 requires that when thermal power is ≤ 20% RTP, all OPERABLE control rods shall comply with the requirements of the BPWS.

B.6 TS Section 3.1.7, "Standby Liquid Control (SLC) System"

TS Section 3.1.7, Figure 3.1.7-1 specifies the requirements for the "Weight Percent Sodium Pentaborate Solution Concentration / Net Tank Volume Requirements."

B.7 TS Section 3.2.1, "Average Planar Linear Heat Generation Rate (APLHGR)"

TS Section 3.2.1 requires that when thermal power is ≥ 25% RTP, all APLHGRs shall be less than or equal to the limits specified in the Core Operating Limits Report (COLR). Accordingly, Condition B requires that the thermal power be reduced to < 25% RTP whenever the Required Action and associated Completion Time are not met. Moreover, TS Surveillance Requirement (SR) 3.2.1.1 requires the verification that all APLHGRs are less than or equal to the limits specified in the COLR once within 12 hours after ≥ 25% RTP.

B.8 TS Section 3.2.2, "Minimum Critical Power Ratio (MCPR)"

TS Section 3.2.2 Applicability requires that when thermal power is ≥ 25% RTP, all MCPRs shall be greater than or equal to the MCPR operating limits specified in the COLR. Accordingly, Condition B requires that the thermal power be reduced to < 25% RTP whenever the Required Action and associated Completion Time are not met.

Moreover, SR 3.2.2.1 requires verification that all MCPRs are greater than or equal to the limits specified in the COLR once within 12 hours after ≥ 25% RTP.

B.9 TS Section 3.2.3, "Linear Heat Generation Rate (LHGR)"

TS Section 3.2.3 requires that when thermal power is ≥ 25% RTP, all LHGRs shall be less than or equal to the limits specified in the COLR. Accordingly, Condition B requires that the thermal power be reduced to < 25% RTP whenever the Required Action and associated Completion Time are not met. Moreover, SR 3.2.3.1 requires the verification that all LHGRs are less than or equal to the limits specified in the COLR once within 12 hours after ≥ 25% RTP.

B.10 TS Section 3.3.1.1, "RPS Instrumentation"

TS SR 3.3.1.1.2

TS SR 3.3.1.1.2 requires verification that the absolute difference between the average power range monitor (APRM) channels and the calculated power ≤ 2% RTP while operating at ≥ 25% RTP. A Note clarifies that the SR is not required to be performed until 12 hours after thermal power is ≥ 25% RTP.

TS SR 3.3.1.1.16

TS SR 3.3.1.1.16 requires verification that the Turbine Stop Valve Closure and Turbine Control Valve Fast Closure Trip Oil Pressure - Low Functions are not bypassed when thermal power is ≥ 40% RTP.

TS Table 3.3.1.1-1, Function 2.b

TS Table 3.3.1.1-1, Function 2.b specifies an Allowable Value for the Average Power Range Monitor Flow Biased Simulated Thermal Power - High Function of ≤ 0.66 W + 67% RTP. Accordingly, footnote (b) specifies an Allowable Value for this Function of ≤ 0.66 (W-8) + 51% RTP when reset for single loop operation.

TS Table 3.3.1.1-1, Function 5

TS Table 3.3.1.1-1, Function 5 specifies that the Reactor Vessel Water Level - High, Level 8 Function is required to be operable when reactor power is ≥ 25% RTP. Accordingly, Condition F requires that the thermal power be reduced to < 25% RTP whenever the Required Action and associated Completion Time are not met.

TS Table 3.3.1.1-1, Function 9

TS Table 3.3.1.1-1, Function 9 specifies that the Turbine Stop Valve Closure Function is required to be operable when reactor power is ≥ 40% RTP. Accordingly, Condition E requires that the thermal power be reduced to < 40% RTP whenever the Required Action and associated Completion Time are not met.

TS Table 3.3.1.1-1, Function 10

TS Table 3.3.1.1-1, Function 10 specifies that the Turbine Control Valve Fast Closure, Trip Oil Pressure - Low Function is required to be operable when reactor power is ≥ 40% RTP. Accordingly, Condition E requires that the thermal power be reduced to < 40% RTP whenever the Required Action and associated Completion Time are not met.

B.11 TS Section 3.3.2.1, "Control Rod Block Instrumentation"

TS SR 3.3.2.1.2

The Note preceding TS SR 3.3.2.1.2 allows one hour after thermal power is > 35% RTP and less than or equal to the Rod Withdrawal Limiter (RWL) High Power Setpoint (HPSP) to perform the Channel Functional Test for Table 3.3.2.1-1, Function 1.a, "Rod Pattern Control System - Rod Withdrawal Limiter."

TS SR 3.3.2.1.4

The Note preceding TS SR 3.3.2.1.4 allows one hour after Mode 1 (i.e., "Power Operations"), with thermal power ≤ 20% RTP to perform the Channel Functional Test for Table 3.3.2.1-1, Function 1.b, "Rod Pattern Control System - Rod Pattern Controller."

TS SR 3.3.2.1.5

TS SR 3.3.2.1.5 requires the calibration of the Rod Pattern Control System low power setpoint analog trip modules at an Allowable Value of > 20% RTP and ≤ 35% RTP.

TS Table 3.3.2.1-1, Function 1.a

TS Table 3.3.2.1-1, Function 1.a specifies that the RWL Function is required to be operable with thermal power > 35% RTP and less than or equal to the RWL HPSP.

TS Table 3.3.2.1-1, Function 1.b

TS Table 3.3.2.1-1, Function 1.b specifies that the Rod Pattern Controller Function is required to be operable in Mode 1 with thermal power ≤ 20% RTP.

B.12 TS Section 3.3.4.1, "End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation"

TS Section 3.3.4.1 requires that when thermal power is ≥ 40% RTP with any recirculation pump in fast speed, the associated EOC-RPT instrumentation shall be operable. Accordingly, Condition D requires that the thermal power be reduced to < 40% RTP whenever the Required Action and associated Completion Time are not met. Moreover, SR 3.3.4.1.4 requires the verification that Turbine Stop Valve (TSV) Closure and Turbine Control Valve (TCV) Fast Closure, Trip Oil Pressure - Low Functions are not bypassed when thermal power is ≥ 40% RTP.

B.13 TS Section 3.3.6.1, "Primary Containment and Drywell Isolation Instrumentation"

TS Table 3.3.6.1-1, Function 1.c

TS Table 3.3.6.1-1, Function 1.c specifies an Allowable Value for the Main Steam Line Isolation, Main Steam Line Flow - High Function of ≤ 178 psid.

B.14 TS Section 3.4.1, "Recirculation Loops Operating"

TS Section 3.4.1 requires that when only one recirculation loop is in operation, thermal power shall be ≤ 70% RTP. Accordingly, Condition E requires that the thermal power be reduced to ≤ 70% RTP whenever thermal power is > 70% RTP during single recirculation loop operation. Moreover, Figure 3.4.1-1 denotes the total core flow as a function of thermal power.

B.15 TS Section 3.4.3, "Jet Pumps"

TS SR 3.4.3.1 requires the verification of the structural integrity of the jet pumps to ensure their ability to allow reflooding to two-thirds core height during a Loss of Coolant Accident (LOCA). Specifically, the SR contains a Note that the requirements need not be performed until 24 hours after > 25% RTP.

B.16 TS Section 3.4.11, "RCS P/T Limits"

TS Section 3.4.11 limits the pressure and temperature changes during reactor coolant system (RCS) heatup and cooldown, within the design assumptions and the stress limits for cyclic operation. Specifically, SR 3.4.11.8 and SR 3.4.11.9 ensure that thermal stresses are within design allowances whenever thermal power or recirculation loop flow is increased. The SRs contain a Note that the requirements are to be met only in single loop operation during increases in thermal power or recirculation loop flow with thermal power ≤ 30% RTP or recirculation loop flow in the operating loop ≤ 30% of rated flow.

B.17 TS Section 3.7.6, "Main Turbine Bypass System"

TS Section 3.7.6 requires that when thermal power is ≥ 25% RTP, the Main Turbine Bypass System shall be operable. Accordingly, Condition B requires that the thermal power be reduced to < 25% RTP whenever the Required Action and associated Completion Time are not met.

C. BASES FOR THE CURRENT REQUIREMENTS

C.1. Operating License Maximum Power Level

The current Operating License and affected TS sections are based on a RTP of 2894 MWt. The supporting transient and accident analyses justifying operation are also based on this RTP with appropriate margins added, in accordance with regulatory guidance. Limits placed on RTP, RCS pressure, RCS temperature and flow ensure that the initial conditions will be met for each of the transients analyzed.

C.2. TS Definition of Rated Thermal Power

The current Operating License and affected TS sections are based on a RTP of 2894 MWt. The supporting transient and accident analyses justifying operation are also based on this RTP with appropriate margins added, in accordance with regulatory guidance.

C.3 TS Section 2.1.1, "Reactor Core SLs"

The requirement of TS Section 2.1.1.1, Reactor Core Safety Limits (SLs) is provided to ensure fuel cladding does not sustain damage as a result of normal operation and anticipated operational occurrences. The Reactor Core SLs are established to preclude violation of the fuel design criterion that a Minimum Critical Power Ratio SL is to be established, such that at least 99.9% of the fuel rods in the core would not be expected to experience the onset of transition boiling. The critical power correlations for CPS are applicable for all critical power calculations a pressures ≥ 785 psig and core flows ≥ 10% of rated flow. For operation at low pressures or low flows, the following basis is used.

Since the pressure drop in the bypass region is essentially all elevation head, the core pressure drop at low power and flows will always be > 4.5 psi. Analyses described in GE Report NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel, GESTAR-II," latest approved revision, show that with a bundle flow of 28 x 10^3 lb/hr, bundle pressure drop is nearly independent of bundle power and has a value of 3.5 psi. Thus, the bundle flow with a 4.5 psi driving head will be > 28 x 10^3 lb/hr. Full scale ATLAS test data taken at pressures from 14.7 psia to 800 psia indicate that the fuel assembly critical power at this flow is approximately 3.35 MWt. With the design peaking factors, this corresponds to a thermal power > 50% RTP. Thus, the TS thermal power limit of 25% RTP for reactor pressure < 785 psig is conservative.

C.4 TS Section 3.1.3, "Control Rod OPERABILITY"

The requirements of TS Section 3.1.3 ensure the operability of individual control rods based upon a combination of factors, primarily the scram insertion times, the control rod coupling integrity, and the ability to determine the control rod position. The control rods provide the primary means for rapid reactivity control (i.e., reactor scram), for maintaining the reactor subcritical, and for limiting the potential effects of reactivity insertion events caused by malfunctions in the Control Rod Drive System. The capability of inserting the control rod provides assurance that the assumptions for scram reactivity in the design basis accident and transient analyses are not violated. The control rods also protect the fuel from damage that could result in release of radioactivity. The limits protected are the Minimum Critical Power SL, the 1% cladding plastic strain fuel design limit, and the fuel damage limit during reactivity insertion events.

Specifically, out of sequence control rods may increase the potential reactivity worth of a dropped control rod during a Control Rod Drop Accident (CRDA). At ≤ 20% RTP, the generic BPWS analysis requires inserted control rods not in compliance with BPWS to be separated by at least two operable control rods in all directions, including diagonal. Therefore, Condition D requires that if two or more inoperable control rods are not in compliance with BPWS and not separated by at least two operable control rods, action must be taken to restore compliance with BPWS or restore the control rods to operable status. The Note preceding Condition D clarifies that the requirements "to restore compliance with BPWS" and "to restore control rod to OPERABLE status" are not necessary to be met when > 20% RTP since the BPWS is not required to be followed under these conditions.

C.5 TS Section 3.1.6, "Control Rod Pattern"

The requirements of TS Section 3.1.6 ensure that the control rod patterns are consistent with the assumptions of the CRDA analyses. CRDA analyses assume that the reactor operator follows prescribed withdrawal sequences. These sequences define the potential initial conditions for the CRDA analyses. The rod pattern controller (RPC) provides backup to the operator control of the withdrawal sequences to ensure that the initial conditions of the CRDA analyses are not violated.

Specifically, control rod patterns analyzed in Updated Safety Analysis Report (USAR) Section 15.4.9 follow the requirements of the BPWS. The BPWS is applicable from the condition of all control rods fully inserted to 20% RTP. Therefore, TS Section 3.1.6 requires that when in Modes 1 (i.e., "Power Operations") and 2 (i.e., "Startup") with thermal power ≤ 20% RTP, all operable control rods shall comply with the requirements of the BPWS.

C.6 TS Section 3.1.7, "Standby Liquid Control (SLC) System"

The requirements of TS Section 3.1.7 ensure the capability of bringing the reactor to a subcritical condition, with the reactor in the most reactive xenon free state, without taking credit for control rod movement. The SLC System satisfies the requirements of 10 CFR 50.62, "Requirements for reduction of risk from anticipated transients without scram (ATWS) events for light-water-cooled nuclear power plants." Specifically, the SLC System injects borated water into the reactor core to compensate for all of the various reactivity effects that could occur during plant operation. The SLC System concentration versus volume requirements are provided as a graph in TS Section 3.1.7, Figure 3.1.7-1, "Weight Percent Sodium Pentaborate Solution Concentration / Net Tank Volume Requirements." SR 3.1.7.5 ensures the verification of the concentration of boron in solution is within the limits of Figure 3.1.7-1.

C.7 TS Section 3.2.1, "Average Planar Linear Heat Generation Rate (APLHGR)"

The requirements of TS Section 3.2.1 ensure that the fuel design limits are not exceeded during anticipated operational occurrences and that the peak cladding temperature during the postulated design basis loss of coolant accident does not exceed the limits specified in 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors." The APLHGR is a measure of the average LHGR of all the fuel rods in a fuel assembly at any axial location. TS Section 3.2.1 requirements are applicable when thermal power is ≥ 25% RTP. At thermal power levels < 25% RTP, the reactor operates with substantial margin to the APLHGR limits.

C.8 TS Section 3.2.2, "Minimum Critical Power Ratio (MCPR)"

The requirements of TS Section 3.2.2 ensure that no fuel damage results during anticipated operational occurrences. The MCPR operating limit is a ratio of the fuel assembly power that would result in the onset of boiling transition to the actual fuel assembly power. Although fuel damage does not 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. To ensure that 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 MCPR operating limit is obtained when the largest delta CPR is added to the MCPR SL. TS Section 3.2.2 requirements are applicable when thermal power is ≥ 25% RTP. At thermal power levels < 25% RTP, the reactor operates with substantial margin to the MCPR limits.

C.9 TS Section 3.2.3, "Linear Heat Generation Rate (LHGR)"

The requirements of TS Section 3.2.3 ensure that fuel design limits are not exceeded anywhere in the core during normal operation, including anticipated operational occurrences. The LHGR is a measure of the heat generation rate of a fuel rod in a fuel assembly at any axial location. TS Section 3.2.3 requirements are applicable when thermal power is ≥ 25% RTP. At thermal power levels < 25% RTP, the reactor operates with substantial margin to the LHGR limits.

C.10 TS Section 3.3.1.1, "RPS Instrumentation"

The reactor protection system (RPS) initiates a reactor scram when monitored parameter values exceed their specified limits. The initiation of the scram preserves the integrity of the fuel cladding, the reactor coolant pressure boundary, and the containment by minimizing the energy that must be absorbed following a LOCA.

<u>TS SR 3.3.1.1.2</u>

The requirements of TS SR 3.3.1.1.2 ensure that the APRM channels are accurately indicating the true core average power, the APRMs are calibrated to the reactor power calculated from a heat balance. The SR verifies that the absolute difference between the APRM channels and the calculated power is ≤ 2% RTP while operating at ≥ 25% RTP. This thermal power requirement is unnecessary since it is difficult to accurately maintain APRM indication of core thermal power consistent with a heat balance when < 25% RTP. At low power levels, a high degree of accuracy is necessary because of the large inherent margin to thermal limits (i.e., MCPR and APLHGR). The Applicability of the Function is referenced in a Note preceding SR 3.3.1.1.2. The Note allows a specific time period to perform the SR upon entering the Applicability.

<u>TS SR 3.3.1.1.16</u>

The requirements of TS SR 3.3.1.1.16 ensure that the scrams initiated from the TSV Closure and TCV Fast Closure, Trip Oil Pressure - Low Functions will not be inadvertently bypassed when thermal power is ≥ 40% RTP. This thermal power requirement is consistent with analysis assumptions for the turbine trip event (for the TSV Closure Function) and the generator load rejection event (i.e., TCV Fast Closure, Trip Oil Pressure - Low Function). Below 40% RTP the Reactor Vessel Steam Dome Pressure - High and the Average Power Range Monitor Fixed Neutron Flux - High Functions are adequate to maintain the necessary safety margins.

TS Table 3.3.1.1-1, Function 2.b

The APRM Flow Biased Simulated Thermal Power - High Function monitors neutron flux to approximate the thermal power being transferred to the reactor coolant. The APRM neutron flux is electronically filtered with a time constant representative of the fuel heat transfer dynamics to generate a signal proportional to the thermal power in the reactor. This function provides protection against transients where thermal power increases slowly, such as a loss of feedwater heating event, and protects the fuel cladding integrity by ensuring that the MCPR SL is not exceeded. The trip level is varied as a function of recirculation drive flow (i.e., at lower core flows the setpoint is reduced proportional to the reduction in power experienced as core flow is reduced with a fixed control rod pattern) but is clamped at an upper limit that is always lower than the APRM Neutron Flux - High Function Allowable Value.

TS Table 3.3.1.1-1, Function 5

The Reactor Vessel Water Level - High, Level 8 Function is assumed in the feedwater controller failure, maximum demand analysis. High RPV water level indicates a potential problem with the feedwater level control system, resulting in the addition of reactivity associated with the introduction of a significant amount of relatively cold feedwater. Therefore, a scram is initiated at Level 8 to ensure that MCPR is maintained above the MCPR SL. Below 25% RTP, this Function is not required since MCPR is not a concern below 25% RTP.

TS Table 3.3.1.1-1, Function 9

The TSV Closure Function is assumed in the turbine trip event. Closure of the TSVs results in the loss of a heat sink that produces reactor pressure, neutron flux, and heat flux transients that must be limited. Therefore, a reactor scram is initiated at the start of TSV closure in anticipation of the transients that would result from the closure of these valves. Below 40% RTP the Reactor Vessel Steam Dome Pressure - High and the Average Power Range Monitor Fixed Neutron Flux - High Functions are adequate to maintain the necessary safety margins.

TS Table 3.3.1.1-1, Function 10

The TCV Fast Closure, Trip Oil Pressure - Low Function is assumed in the generator load rejection event. Fast closure of the TCVs results in the loss of a heat sink that produces reactor pressure, neutron flux, and heat flux transients that must be limited. Therefore, a reactor scram is initiated on TCV fast closure in anticipation of the transients that would result from the closure of these valves. Below 40% RTP the Reactor Vessel Steam Dome Pressure - High and the Average Power Range Monitor Fixed Neutron Flux - High Functions are adequate to maintain the necessary safety margins.

C.11 TS Section 3.3.2.1, "Control Rod Block Instrumentation"

The control rod block instrumentation ensures that specified fuel design limits are not exceeded for postulated transients and accidents. During high power operation, the RWL provides protection for control rod withdrawal error events. During low power operation, control rod blocks from the rod pattern controller (RPC) enforce specific control rod sequences designed to mitigate the consequences of the CRDA.

TS SR 3.3.2.1.2

The requirements of TS SR 3.3.2.1.2 ensure the operation of the RWL with the performance of a Channel Functional Test. The RWL is designed to prevent violation of the MCPR SL and the cladding 1% plastic strain fuel design limit that may result from a single control rod withdrawal error when operating above 35% RTP. Below 35% RTP, the consequences of a rod withdrawal error event will not exceed the MCPR. The Applicability of the Function is referenced in a Note preceding SR 3.3.2.1.2. The Note allows a specific time period to perform the SR upon entering the Applicability.

TS SR 3.3.2.1.4

The requirements of TS SR 3.3.2.1.4 ensure the operation of the RPC with the performance of a Channel Functional Test. The RPC enforces BPWS to ensure that the initial conditions of the CRDA analysis are not violated. Compliance with the BPWS, and therefore operability of the RPC, is required with thermal power ≤ 20% RTP. Above 20% RTP, there is no possible control rod configuration that results in a control rod worth that could exceed the 280 cal/gm fuel damage limit during a CRDA. The Applicability of the Function is referenced in a Note preceding SR 3.3.2.1.4. The Note allows a specific time period to perform the SR upon entering the Applicability.

TS SR 3.3.2.1.5

The requirements of TS SR 3.3.2.1.5 ensure the calibration of the low power setpoint (LPSP) trip modules. The LPSP is the point at which the RPC makes the transition between the function of the RPC and the RWL. This transition is automatically varied as a function of power. This power level is inferred from the first stage turbine pressure. The Allowable Value of the LPSP trip modules is established at > 20% RTP and ≤ 35% RTP. The RWL is assumed to mitigate the consequences of a rod withdrawal error event when operating above 35% RTP. Below this power level, the consequences of a rod withdrawal error event will not exceed the MCPR. The RPC is assumed to comply with the BPWS to ensure that the initial conditions of the CRDA analysis are not violated. Compliance with the BPWS is required with thermal power ≤ 20% RTP. Above 20% RTP, there is no possible control rod configuration that results in a control rod worth that could exceed the 280 cal/gm fuel damage limit during a CRDA.

TS Table 3.3.2.1-1, Function 1.a

The RWL Function prevents violation of the MCPR SL and the cladding 1% plastic strain fuel design limit that may result from a single control rod withdrawal error when operating above 35% RTP. The Applicable Mode of the RWL Function is provided as footnote (b) to Table 3.3.2.1-1. Below 35% RTP, the consequences of a rod withdrawal error event will not exceed the MCPR.

TS Table 3.3.2.1-1, Function 1.b

The RPC Function enforces BPWS to ensure that the initial conditions of the CRDA analysis are not violated. Compliance with the BPWS, and therefore operability of the RPC, is required with thermal power ≤ 20% RTP. The Applicable Mode of the RPC Function is provided as footnote (c) to Table 3.3.2.1-1. Above 20% RTP, there is no possible control rod configuration that results in a control rod worth that could exceed the 280 cal/gm fuel damage limit during a CRDA.

C.12 TS Section 3.3.4.1, "End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation"

The requirements of TS Section 3.3.4.1 ensure additional margin to core thermal MCPR SLs. The EOC-RPT instrumentation initiates a recirculation pump trip to reduce the peak reactor pressure and power resulting from turbine trip or generator load rejection transients. The need for additional negative reactivity in excess of that normally inserted on a scram reflects end of cycle reactivity considerations. Flux shapes at the end of cycle are such that the control rods may not be able to ensure that thermal limits are maintained by inserting sufficient negative reactivity during the first few feet of rod travel upon a scram caused by TSV Closure and TCV Fast Closure, Trip Oil Pressure – Low Functions.

TS Section 3.3.4.1 requirements are applicable when thermal power is ≥ 40% RTP with any recirculation pump in fast speed. The TSV Closure and TCV Fast Closure, Trip Oil Pressure - Low Functions are designed to trip the recirculation pumps from fast speed operation in the event of a turbine trip or generator load rejection. This action will mitigate the neutron flux, heat flux, and pressure transients, and to increase the margin to the MCPR SL. To mitigate pressurization transient effects, the EOC-RPT must trip the recirculation pumps from fast speed operation after initiation of initial closure movement of either the TSVs or the TCVs. The combined effects of this trip and the scram reduce fuel bundle power more rapidly than does a scram alone, resulting in an increased margin to the MCPR SL. The EOC-RPT Function is automatically disabled when turbine first stage pressure is < 40% RTP. Below 40% RTP or with recirculation pumps in slow speed, the Reactor Vessel Steam Dome Pressure - High and the Average Power Range Monitor Fixed Neutron Flux - High Functions of the RPS are adequate to maintain the necessary safety margins.

C.13 TS Section 3.3.6.1, "Primary Containment and Drywell Isolation Instrumentation"

The requirements of TS Section 3.3.6.1 ensure that the primary containment and drywell isolation instrumentation automatically initiates closure of appropriate primary containment isolation valves and drywell isolation valves. The Main Steam Line Flow – High Function, is provided to detect a break of the main steam line and to initiate closure of the main steam isolation valves. The isolation is initiated on high flow to prevent or minimize core damage. If the steam were allowed to continue flowing out of the break, the reactor would depressurize, the core could uncover, and the fuel could be damaged. The Main Steam Line Flow – High Function is directly assumed in the main steam line break accident. The Main Steam Line Flow – High Function Allowable Value is chosen to ensure that the offsite dose limits are not exceeded due to the break.

C.14 TS Section 3.4.1, "Recirculation Loops Operating"

The requirements of TS Section 3.4.1 ensure that the assumptions of the LOCA analysis are satisfied during single or two recirculation loop operation. Specifically, for single loop operation, thermal power must be ≤ 70% RTP. A thermal power > 70% RTP, during single loop operation, would create a thermal hydraulic stability concern.

C.15 TS Section 3.4.3, "Jet Pumps"

The requirements of TS Section 3.4.3 ensure the structural integrity of the jet pumps. The structural failure of any of the jet pumps could cause significant degradation in the ability of the jet pumps to allow reflooding to two-thirds core height during a LOCA. Jet pump operability is an explicit assumption in the design basis LOCA analysis. Specifically, the verification of jet pump degradation is not required until 24 hours after > 25% RTP. At thermal power levels ≤ 25% RTP, low flow conditions exists and jet pump noise approaches the threshold response of the associated flow instrumentation and precludes the collection of repeatable and meaningful data.

C.16 TS Section 3.4.11, "RCS P/T Limits"

The requirements of TS Section 3.4.11 ensure operating limits that provide a margin to brittle failure of the reactor vessel and piping of the Reactor Coolant Pressure Boundary (RCPB). The requirements limit pressure and temperature changes during RCS heatup and cooldown, within the design assumptions and the stress limits for cyclic operation. Specifically, SR 3.4.11.8 and SR 3.4.11.9 ensure that thermal stresses are within design allowances whenever thermal power or recirculation loop flow is increased. The SRs contain a Note that the requirements are only required to be met in single loop operation during increases in thermal power or recirculation loop flow with thermal power ≤ 30% RTP or recirculation loop flow in the operating loop ≤ 30% of rated flow. Plant specific test data has determined that the bottom head is not subject to temperature stratification with natural circulation at these power levels.

C.17 TS Section 3.7.6, "Main Turbine Bypass System"

The requirements of TS Section 3.7.6 ensure the control of steam pressure when reactor steam generation exceeds turbine requirements during unit startup, sudden load reduction, and cooldown. The Main Turbine Bypass System is assumed to function during the design basis feedwater controller failure, maximum demand event. TS Section 3.7.6 requirements are applicable when thermal power is ≥ 25% RTP. This ensures that the fuel cladding integrity SL and the cladding 1% plastic strain limit are not violated. At thermal power levels < 25% RTP, the reactor operates with substantial margin to the APLHGR and MCPR limits.

D. NEED FOR REVISION OF THE REQUIREMENTS

The proposed changes described herein will allow CPS to operate at a power level of 3473 MWt. This represents an increase of approximately 20 percent rated core thermal power over the current 100 percent power level of 2894 MWt. The operational goal of these proposed changes is to increase electrical generating capacity. The effects of a power uprate at CPS have been comprehensively evaluated and have concluded that sufficient safety and design margins exists such that an increase in rated core thermal power can be accomplished without adverse impact on the health and safety of the public and without significant impact on the environment.

Once per year, the North American Electric Reliability Council performs a forecast reliability assessment using information provided by the regional reliability councils such as Mid-Continent Area Power Pool (MAPP) and Mid-American Interconnected Network (MAIN), Inc. This assessment includes a forecasted increase in expected customer peak demand, based on historical increases, of approximately 1.5% - 1.8% per year for the MAPP and MAIN regions through the 1999-2008 planning period. To meet this projected demand, generating capacity must increase by over 14,000 megawatts electric (MWe) in the MAPP and MAIN areas by 2008 to maintain a 12% operating margin for reliability.

AmerGen has determined the need for additional generation resources in its territory through a comparison of the projected load growth to the generation and possible power purchases. There are two significant aspects of maintaining a flexible and robust supply portfolio. The first is to obtain low cost power. The second is to maintain a portfolio with sufficient diversity to allow the utilities to respond to changes in the underlying cost of power, owned or purchased. The increase in capacity of CPS provides AmerGen with lower cost power than can be obtained in the current and anticipated energy market. In addition, the increased capacity reduces exposure to potential cost increases in fossil fuel based alternatives.

Extended power uprate is an important step in improving the economic performance of CPS during and after utility deregulation. The improved performance is accomplished by appropriate cost reductions in production and total bus bar cost per kilowatt-hour. Therefore, extended power uprate should enhance the value of CPS as a generating asset.

In the initial period of regulated operation, the uprate project would help AmerGen meet projected need for additional capacity. Comparing CPS to new Combustion Turbine Units, Combined Cycle, and Purchased Power agreements, increasing CPS capacity is the lowest cost option for maintaining a highly reliable power supply.

D.1. Operating License Maximum Power Level

The proposed changes allow an increase in licensed core thermal power from 2894 MWt to 3473 MWt and provide the flexibility to increase the potential electrical output of CPS. This power uprate will provide a net increase of approximately 160 MWe in generation to several commercial and domestic loads on the electrical grid. This power increase is needed to help meet the growth demand on the electrical distribution system while avoiding major capital expenditures associated with building new generating capacity.

D.2. TS Definition of Rated Thermal Power

The proposed changes allow an increase in licensed core thermal power from 2894 MWt to 3473 MWt and provide the flexibility to increase the potential electrical output of CPS. This change is needed to support the change identified in Section D.1 of this attachment.

D.3 TS Section 2.1.1, "Reactor Core SLs"

The proposed changes to TS Section 2.1.1.1 revise the percent RTP at which the Reactor Core SLs are violated during operation at low pressures or low flows from ≤ 25% RTP to ≤ 21.6% RTP. The new percent RTP is required to maintain the same basis of absolute bundle thermal power level for when the SLs are verified.

D.4 TS Section 3.1.3, "Control Rod OPERABILITY"

The proposed changes to the Note preceding TS Section 3.1.3, Condition D revise the percent RTP at which two or more inoperable control rods, not in compliance with the BPWS and not separated by two or more Operable control rods, are required to be restored to Operable status. The percent RTP has been revised from > 20% RTP to > 16.7% RTP. The new percent RTP is required to maintain the existing thermal power level under power uprate conditions for when the BPWS requirements are applicable.

D.5 TS Section 3.1.6, "Control Rod Pattern"

The proposed changes to the Applicability of TS Section 3.1.6 revise the percent RTP at which operable control rods shall comply with the requirements of the BPWS. The percent RTP has been revised from ≤ 20% RTP to ≤ 16.7% RTP. The new percent RTP is required to maintain the existing thermal power level under power uprate conditions for when the BPWS requirements are applicable.

D.6 TS Section 3.1.7, "Standby Liquid Control (SLC) System"

The proposed changes to TS Section 3.1.7, Figure 3.1.7-1 revise the SLC System concentration requirements. The Figure has been revised from a 10.3% to a 10.8% minimum allowable concentration.

D.7 TS Section 3.2.1, "Average Planar Linear Heat Generation Rate (APLHGR)"

The proposed changes to the Applicability, Required Action, and SR of TS Section 3.2.1 revise the percent RTP at which all APLHGRs shall be less than or equal to the limits specified in the COLR. The percent RTP for the Applicability has been revised from ≥ 25% RTP to ≥ 21.6% RTP. The new percent RTP is required to maintain the same basis of absolute bundle thermal power level under power uprate conditions for when the requirements are applicable.

D.8 TS Section 3.2.2, "Minimum Critical Power Ratio (MCPR)"

The proposed changes to the Applicability, Required Action, and SR of TS Section 3.2.2 revise the percent RTP at which all MCPRs shall be greater than or equal to the MCPR operating limits specified in the COLR. The percent RTP for the Applicability has been revised from ≥ 25% RTP to ≥ 21.6% RTP. The new percent RTP is required to maintain the same basis of absolute bundle thermal power level under power uprate conditions for when the requirements are applicable.

D.9 TS Section 3.2.3, "Linear Heat Generation Rate (LHGR)"

The proposed changes to the Applicability, Required Action, and SR of TS Section 3.2.3 revise the percent RTP at which all LHGRs shall be less than or equal to the limits specified in the COLR. The percent RTP for the Applicability has been revised from ≥ 25% RTP to ≥ 21.6% RTP. The new percent RTP is required to maintain the same basis of absolute bundle thermal power level under power uprate conditions for when the requirements are applicable.

D.10 TS Section 3.3.1.1, "RPS Instrumentation"

Changes to the RPS Instrumentation TS Functions are proposed as follows.

<u>TS SR 3.3.1.1.2</u>

The proposed changes to the Note preceding TS SR 3.3.1.1.2 and TS SR 3.3.1.1.2 revise the percent RTP at which the APRMs are verified calibrated to the reactor power calculated from a heat balance. The percent RTP has been revised from ≥ 25% RTP to ≥ 21.6% RTP. The new percent RTP is required to maintain the same basis of absolute bundle thermal power level under power uprate conditions for when the requirements are verified met.

<u>TS SR 3.3.1.1.16</u>

The proposed changes to the TS SR 3.3.1.1.16 revise the percent RTP at which the TSV Closure and TCV Fast Closure, Trip Oil Pressure - Low Functions will not be inadvertently bypassed. The percent RTP has been revised from ≥ 40% RTP to ≥ 33.3% RTP. The new percent RTP is required to maintain the existing thermal power level under power uprate conditions for when the requirements are verified met.

<u>TS Table 3.3.1.1-1, Function 2.b</u>

The proposed changes to TS Table 3.3.1.1-1, Function 2.b, revise the Allowable Values for the APRM Flow Biased Simulated Thermal Power - High Function. The Allowable Value for two loop operation has been revised from ≤ 0.66 W + 67% RTP and ≤ 113% RTP to ≤ 0.55 W + 62% RTP and ≤ 113% RTP. The Allowable Value for single loop operation denoted in footnote (b) has been revised from ≤ 0.66 (W-8) + 51% RTP to ≤ 0.55 (W-8) + 42.5% RTP. The Allowable Values have been adjusted to match the associated clamped analytical limit at the minimum operating core flow, approximating the recirculation drive flow, corresponding to the new rated power. The new Allowable Values are required to reflect the change in the Analytical Limits under power uprate conditions consistent with current setpoint methodology.

<u>TS Table 3.3.1.1-1, Function 5</u>

The proposed changes to TS Table 3.3.1.1-1, Function 5, revise the percent RTP at which the Reactor Vessel Water Level - High, Level 8 Function shall be operable. The percent RTP for the Applicability has been revised from ≥ 25% RTP to ≥ 21.6% RTP. The new percent RTP is required to maintain the same basis of absolute bundle thermal power level under power uprate conditions for when the requirements are applicable.

<u>TS Table 3.3.1.1-1, Function 9</u>

The proposed changes to TS Table 3.3.1.1-1, Function 9, revise the percent RTP at which the TSV Closure Function shall be operable. The percent RTP for the Applicability has been revised from ≥ 40% RTP to ≥ 33.3% RTP. The new percent RTP is required to maintain the existing thermal power level under power uprate conditions for when the requirements are applicable.

TS Table 3.3.1.1-1, Function 10

The proposed changes to TS Table 3.3.1.1-1, Function 10, revise the percent RTP at which the TCV Fast Closure, Trip Oil Pressure - Low Function shall be operable. The percent RTP for the Applicability has been revised from ≥ 40% RTP to ≥ 33.3% RTP. The new percent RTP is required to maintain the existing thermal power level under power uprate conditions for when the requirements are applicable.

D.11 TS Section 3.3.2.1, "Control Rod Block Instrumentation"

Changes to the Control Rod Block Instrumentation TS are proposed as follows.

TS SR 3.3.2.1.2

The proposed changes to TS SR 3.3.2.1.2 revise the percent RTP at which the RWL Function is verified to be functionally tested. The percent RTP has been revised from > 35% RTP to > 29.2% RTP. The new percent RTP is required to maintain the existing thermal power level under power uprate conditions for when the requirements are applicable.

TS SR 3.3.2.1.4

The proposed changes to TS SR 3.3.2.1.4 revise the percent RTP at which the RPC Function is verified to be functionally tested. The percent RTP has been revised from ≤ 20% RTP to ≤ 16.7% RTP. The new percent RTP is required to maintain the existing thermal power level under power uprate conditions for when the requirements are applicable.

TS SR 3.3.2.1.5

The proposed changes to TS SR 3.3.2.1.5 revise the percent RTP associated with the Allowable Value of the LPSP analog trip modules. The percent RTP has been revised from > 20% RTP and ≤ 35% RTP to > 16.7% RTP and ≤ 29.2% RTP. The new percent RTP is required to maintain the existing thermal power level under power uprate conditions for when the requirements are applicable.

TS Table 3.3.2.1-1, Function 1.a

The proposed changes to TS Table 3.3.2.1-1, footnote (b) associated with Function 1.a revise the percent RTP at which the RWL shall be operable. The percent RTP for the Applicability has been revised from > 35% RTP to > 29.2% RTP. The new percent RTP is required to maintain the existing thermal power level under power uprate conditions for when the requirements are applicable.

TS Table 3.3.2.1-1, Function 1.b

The proposed changes to TS Table 3.3.2.1-1, footnote (c) associated with Function 1.b revise the percent RTP at which the RPC shall be operable. The percent RTP for the Applicability has been revised from ≤ 20% RTP to ≤ 16.7% RTP. The new percent RTP is required to maintain the existing thermal power level under power uprate conditions for when the requirements are applicable.

D.12 TS Section 3.3.4.1, "End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation"

The proposed changes to the Applicability, Required Action, and SR of TS Section 3.3.4.1 revise the percent RTP at which each EOC-RPT instrumentation (i.e., TSV Closure and TCV Fast Closure, Trip Oil Pressure - Low) Functions shall be operable. The percent RTP for the Applicability has been revised from ≥ 40% RTP to ≥ 33.3% RTP. The new percent RTP is required to maintain the existing thermal power level under power uprate conditions for when the requirements are applicable.

D.13 TS Section 3.3.6.1, "Primary Containment and Drywell Isolation Instrumentation"

The proposed changes to TS Table 3.3.6.1-1, Function 1.c, revise the Allowable Value for the Main Steam Line Flow – High Function. The Allowable Value has been revised from ≤ 178 psid to ≤ 284 psid. The new Allowable Value is required to account for the increase in steam flow resulting from EPU conditions. The new Allowable Value is required to reflect the change in the Analytical Limits under power uprate conditions consistent with current setpoint methodology.

D.14 TS Section 3.4.1, "Recirculation Loops Operating"

The proposed changes to the TS Limiting Condition for Operation (LCO), Required Action, and Figure 3.4.1-1 of TS Section 3.4.1 revise the percent RTP and corresponding operating region at which recirculation loops (i.e., single or both) shall be in operation. The percent RTP for the TS LCO has been revised from ≤ 70% RTP to ≤ 58% RTP. Similarly, the percent thermal power axis on Figure 3.4.1-1 has been re-scaled corresponding to the percent increase in power. The new percent RTP and stability limits are required to maintain the existing thermal power level under power uprate conditions.

D.15 TS Section 3.4.3, "Jet Pumps"

The proposed changes to TS SR 3.4.3.1 revise the percent RTP at which jet pump operability shall be verified. The percent RTP has been revised from > 25% RTP to > 21.6% RTP. The new percent RTP is required to maintain the same basis of absolute bundle thermal power level under power uprate conditions for when the requirements are met.

D.16 TS Section 3.4.11, "RCS P/T Limits"

The proposed changes to TS SR 3.4.11.8 revise the percent RTP at which the difference between the bottom head coolant temperature and the RPV coolant temperature is verified ≤ 100 °F during single loop operation. The proposed changes to TS SR 3.4.11.9 revise the percent RTP at which the difference between the reactor coolant temperature in the recirculation loop not in operation and the RPV coolant temperature is verified ≤ 50 °F during single loop operation. The percent RTP for the Applicability has been revised from ≤ 30% RTP to ≤ 25% RTP for each of the SRs. The new percent RTP is required to maintain the existing thermal power level under power uprate conditions for when the requirements are applicable.

D.17 TS Section 3.7.6, "Main Turbine Bypass System"

The proposed changes to the Applicability, Required Action, and SR of TS Section 3.7.6 revise the percent RTP at which the Main Turbine Bypass System shall be operable. The percent RTP for the Applicability has been revised from ≥ 25% RTP to ≥ 21.6% RTP. The new percent RTP is required to maintain the same basis of absolute bundle thermal power level under power uprate conditions for when the requirements are applicable.

E. DESCRIPTION OF THE PROPOSED CHANGES

E.1. Operating License Maximum Power Level

Condition 2.C(1) of the current Operating License for CPS is revised to state "AmerGen Energy Company, LLC is authorized to operate the facility at reactor core power levels not in excess of 3473 megawatts thermal (100 percent rated power) in accordance with the conditions specified herein." The RTP is revised from 2894 MWt to 3473 MWt.

E.2. TS Definition of Rated Thermal Power

TS Section 1.1, "RATED THERMAL POWER (RTP)," is revised to state "RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3473 MWt." The RTP is revised from 2894 MWt to 3473 MWt.

E.3 TS Section 2.1.1, "Reactor Core SLs"

TS Section 2.1.1.1, is revised to state "THERMAL POWER shall be ≤ 21.6% RTP." The RTP has been revised from ≤ 25% RTP to ≤ 21.6% RTP.

E.4 TS Section 3.1.3, "Control Rod OPERABILITY"

The Note preceding TS Section 3.1.3, Condition D is revised to state "Not applicable when THERMAL POWER > 16.7% RTP." The RTP has been revised from > 20% RTP to > 16.7% RTP.

E.5 TS Section 3.1.6, "Control Rod Pattern"

TS Section 3.1.6, Applicability is revised to state "MODES 1 and 2 with THERMAL POWER ≤ 16.7% RTP." The RTP has been revised from ≤ 20% RTP to ≤ 16.7% RTP.

E.6 TS Section 3.1.7, "Standby Liquid Control (SLC) System"

TS Section 3.1.7, Figure 3.1.7-1 is revised to reflect a minimum SLC System weight percent concentration requirement from 10.3% to 10.8%.

E.7 TS Section 3.2.1, "Average Planar Linear Heat Generation Rate (APLHGR)"

TS Section 3.2.1, Applicability is revised to state "THERMAL POWER ≥ 21.6% RTP." The RTP has been revised from ≥ 25% RTP to ≥ 21.6% RTP. Required Action B.1 is revised to state "Reduce THERMAL POWER to < 21.6% RTP." The RTP has been revised from < 25% RTP to < 21.6% RTP. TS SR 3.2.1.1, Frequency is revised to state "Once within 12 hours after ≥ 21.6% RTP." The RTP has been revised from ≥ 25% RTP to ≥ 21.6% RTP.

E.8 TS Section 3.2.2, "Minimum Critical Power Ratio (MCPR)"

TS Section 3.2.2, Applicability is revised to state "THERMAL POWER ≥ 21.6% RTP." The RTP has been revised from ≥ 25% RTP to ≥ 21.6% RTP. Required Action B.1 is revised to state "Reduce THERMAL POWER to < 21.6% RTP." The RTP has been revised from < 25% RTP to < 21.6% RTP. TS SR 3.2.2.1, Frequency is revised to state "Once within 12 hours after ≥ 21.6% RTP." The RTP has been revised from ≥ 25% RTP to ≥ 21.6% RTP.

E.9 TS Section 3.2.3, "Linear Heat Generation Rate (LHGR)"

TS Section 3.2.3, Applicability is revised to state "THERMAL POWER ≥ 21.6% RTP." The RTP has been revised from ≥ 25% RTP to ≥ 21.6% RTP. Required Action B.1 is revised to state "Reduce THERMAL POWER to < 21.6% RTP." The RTP has been revised from < 25% RTP to < 21.6% RTP. TS SR 3.2.3.1, Frequency is revised to state "Once within 12 hours after ≥ 21.6% RTP." The RTP has been revised from ≥ 25% RTP to ≥ 21.6% RTP.

E.10 TS Section 3.3.1.1, "RPS Instrumentation"

Changes to the RPS Instrumentation TS Functions are proposed as follows.

<u>TS SR 3.3.1.1.2</u>

TS SR 3.3.1.1.2 is revised to state "Verify the absolute difference... while operating at ≥ 21.6% RTP." In addition, the Note preceding TS SR 3.3.1.1.2 is revised to state "Not required to be performed until 12 hours after THERMAL POWER ≥ 21.6% RTP." The RTP has been revised from ≥ 25% RTP to ≥ 21.6% RTP.

<u>TS SR 3.3.1.1.16</u>

TS SR 3.3.1.1.16 is revised to state "Verify Turbine Stop Valve Closure... when THERMAL POWER is ≥ 33.3% RTP." The RTP has been revised from ≥ 40% RTP to ≥ 33.3% RTP.

<u>TS Table 3.3.1.1-1, Function 2.b</u>

TS Table 3.3.1.1-1, Function 2.b is revised to reflect an Allowable Value for two loop operation of "≤ 0.55 W + 62% RTP and ≤ 113% RTP." The Allowable Value for two loop operation has been revised from ≤ 0.66 W + 67% RTP and ≤ 113% RTP to ≤ 0.55 W + 62% RTP and ≤ 113% RTP. In addition, the footnote (b) associated with TS Table 3.3.1.1-1, Function 2.b is revised to reflect an Allowable Value for single loop operation of "≤ 0.55 (W-8) + 42.5% RTP." The Allowable Value for single loop operation denoted in footnote (b) has been revised from ≤ 0.66 (W-8) + 51% RTP to ≤ 0.55 (W-8) + 42.5% RTP.

TS Table 3.3.1.1-1, Function 5

TS Table 3.3.1.1-1, Function 5, is revised to reflect an Applicability of "≥ 21.6% RTP." The RTP has been revised from ≥ 25% RTP to ≥ 21.6% RTP. The corresponding Required Action F.1 for this function is revised to state "Reduce THERMAL POWER to < 21.6% RTP." The RTP has been revised from < 25% RTP to < 21.6% RTP.

TS Table 3.3.1.1-1, Function 9

TS Table 3.3.1.1-1, Function 9, is revised to reflect an Applicability of "≥ 33.3% RTP." The RTP has been revised from ≥ 40% RTP to ≥ 33.3% RTP. The corresponding Required Action E.1 for this function is revised to state "Reduce THERMAL POWER to < 33.3% RTP." The RTP has been revised from < 40% RTP to < 33.3% RTP.

TS Table 3.3.1.1-1, Function 10

TS Table 3.3.1.1-1, Function 10, is revised to reflect an Applicability of "≥ 33.3% RTP." The RTP has been revised from ≥ 40% RTP to ≥ 33.3% RTP. The corresponding Required Action E.1 for this function is revised to state "Reduce THERMAL POWER to < 33.3% RTP." The RTP has been revised from < 40% RTP to < 33.3% RTP.

E.11 TS Section 3.3.2.1, "Control Rod Block Instrumentation"

Changes to the Control Rod Block Instrumentation TS are proposed as follows.

TS SR 3.3.2.1.2

The Note preceding TS SR 3.3.2.1.2 is revised to state "Not required to be performed until 1 hour after THERMAL POWER is > 29.2% RTP and less than or equal to the RWL HPSP." The RTP has been revised from > 35% RTP to > 29.2% RTP.

TS SR 3.3.2.1.4

The Note preceding TS SR 3.3.2.1.4 is revised to state "Not required to be performed until 1 hour after THERMAL POWER is ≤ 16.7% RTP in MODE 1." The RTP has been revised from ≤ 20% RTP to ≤ 16.7% RTP.

TS SR 3.3.2.1.5

TS SR 3.3.2.1.5 is revised to state "Calibrate the low power... shall be > 16.7% RTP and ≤ 29.2% RTP." The RTP has been revised from > 20% RTP to > 16.7% RTP and from ≤ 35% RTP to ≤ 29.2% RTP.

TS Table 3.3.2.1-1, Function 1.a

TS Table 3.3.2.1-1, Function 1.a, footnote (b) is revised to state "THERMAL POWER > 29.2% RTP and less than or equal to the RWL HPSP." The RTP has been revised from > 35% RTP to > 29.2% RTP.

TS Table 3.3.2.1-1, Function 1.b

TS Table 3.3.2.1-1, Function 1.b, footnote (c) is revised to state "With THERMAL POWER ≤ 16.7% RTP." The RTP has been revised from ≤ 20% RTP to ≤ 16.7% RTP.

E.12 TS Section 3.3.4.1, "End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation"

TS Section 3.3.4.1, Applicability is revised to state "THERMAL POWER ≥ 33.3% RTP with any recirculation pump in fast speed." The RTP has been revised from ≥ 40% RTP to ≥ 33.3% RTP. The corresponding Required Action D.2 for this function is revised to state "Reduce THERMAL POWER to < 33.3% RTP." The RTP has been revised from < 40% RTP to < 33.3% RTP. TS SR 3.3.4.1.4 is revised to state "Verify TSV Closure... when THERMAL POWER is ≥ 33.3% RTP." The RTP has been revised from ≥ 40% RTP to ≥ 33.3% RTP.

E.13 TS Section 3.3.6.1, "Primary Containment and Drywell Isolation Instrumentation"

TS Table 3.3.6.1-1, Function 1.c is revised to reflect an Allowable Value of "≤ 284 psid." The Allowable Value has been revised from ≤ 178 psid to ≤ 284 psid.

E.14 TS Section 3.4.1, "Recirculation Loops Operating"

TS LCO 3.4.1 is revised to state "THERMAL POWER ≤ 58% RTP." Required Action E.1 is revised to state "Reduce THERMAL POWER to ≤ 58% RTP." The RTPs have been revised from ≤ 70% RTP to ≤ 58% RTP. Condition E is revised to state "THERMAL POWER > 58% RTP during single recirculation loop operation." The RTP has been revised from > 70% RTP to > 58% RTP. TS Figure 3.4.1-1 is revised to reflect the revised limits pertaining to the re-scaling of the thermal power axis.

E.15 TS Section 3.4.3, "Jet Pumps"

Note 2 preceding TS SR 3.4.3.1 is revised to state "Not required to be performed until 24 hours after > 21.6% RTP." The RTP has been revised from > 25% RTP to > 21.6% RTP.

E.16 TS Section 3.4.11, "RCS P/T Limits"

The Note preceding TS SR 3.4.11.8 is revised to state "Only required to be met in single loop... with THERMAL POWER ≤ 25% of RTP or recirculation... of rated flow." In addition, the Note preceding TS SR 3.4.11.9 is revised to state "Only required to be met in single loop... with THERMAL POWER ≤ 25% of RTP or recirculation... from the RPV." The RTP has been revised from ≤ 30% RTP to ≤ 25% RTP for each of the SRs.

E.17 TS Section 3.7.6, "Main Turbine Bypass System"

The Applicability of TS Section 3.7.6 is revised to state "THERMAL POWER ≥ 21.6% RTP." The RTP has been revised from ≥ 25% RTP to ≥ 21.6% RTP. In addition, Required Action B.1 is revised to state "Reduce THERMAL POWER to < 21.6% RTP." The RTP has been revised from < 25% RTP to < 21.6% RTP.

F. SAFETY ANALYSIS OF THE PROPOSED CHANGES

F.1. Operating License Maximum Power Level

The proposed changes increase the RTP from 2894 MWt to 3473 MWt. The detailed safety analyses for the proposed changes are contained in Attachment E (i.e., GE Report NEDC-32989P, "Safety Analysis Report for Clinton Power Station Extended Power Uprate," June 2001 (Proprietary)). The analysis demonstrates that CPS can operate safely with the proposed 20 percent increase in maximum core thermal power with a corresponding 22 percent increase in steam flow from the RPV. The analyses also support the required increases of the flow, temperature, and pressure in the supporting systems and components.

CPS is currently licensed for a 100 percent reactor power level of 2894 MWt. Most of the original safety analysis basis assumes a power level at least 1.02 times the licensed power level as recommended by Regulatory Guide 1.49, "Power Levels of Water-Cooled Nuclear Power Plants." Many of the original safety analyses were performed at 105 percent steam flow (i.e., approximately 104.2% thermal power). The proposed uprate power level of 3473 MWt is approximately 16 percent (i.e., 120%/104.2%) greater than the value used in the original safety analyses. The EPU safety analyses are based on a power level of at least 1.02 times the EPU power level, except that some analyses are performed at 100% EPU RTP, because the Regulatory Guide 1.49 two percent power factor is already accounted for in the analysis.

The analyses presented in Attachment E ensure that the power-dependent margin recommended by Regulatory Guide 1.49 is maintained. For the safety analyses, NRC-approved or industry-accepted computer codes and calculational techniques are used to demonstrate compliance with the applicable regulatory acceptance criteria. Similarly, factors and margins specified by the application of design code rules is maintained, as are other margin-assuring acceptance criteria used to judge the acceptability of the plant. A list of the computer codes used for the EPU evaluations is provided in Attachment E.

Effect on Plant Systems

Plant systems and components have been verified to be capable of performing their intended design functions at uprate power conditions, with some minor exceptions. Modifications to plant components necessary to support power uprate are identified in Attachment G. The review has concluded that operation at power uprate conditions will not affect the reliability of plant equipment.

Fuel Design Considerations

As discussed in Attachment E, Section 2, "Reactor Core and Fuel Performance," EPU increases the power density proportional to the power increase. The power distribution in the core is changed to achieve increased core power, while limiting the absolute power in any individual fuel bundle to within its allowable value. New fuel designs are not needed for the EPU to ensure safety. A representative equilibrium cycle of GE14 fuel was used for the uprate evaluation. NRC approved core design methods were used to analyze core performance at the EPU conditions. The cycle specific reload core designs for operation at the uprated power level will take into account the above limits to ensure acceptable differences between the licensing limits and their corresponding operating values.

At uprated conditions, all fuel and core design limits continue to be met by planned deployment of fuel enrichment and burnable poison management, control rod pattern and/or core flow adjustments.

Thermal-hydraulic design and operating limits ensure an acceptably low probability of boiling transition-induced fuel cladding failure occurring in the core, even for the most severe postulated operational transients. If needed, limits will be placed on fuel APLHGR and LHGR in order to meet both peak cladding temperature limits for the limiting LOCA and fuel mechanical design bases.

The EPU may result in a small change in fuel burnup, the amount of fuel to be used and isotopic concentrations of the radionuclides in the irradiated fuel relative to the current level of burnup. NRC approved limits for burnup on the fuel designs are not exceeded.

Capability of Makeup Water Sources

The EPU does not result in an increase or decrease in the available water sources, nor does it change the selection of those assumed to function in the safety analyses. NRC approved methods were used for analyzing the performance of the Emergency Core Cooling System (ECCS) during a postulated LOCA.

Design Basis Accidents

A review of the Design Basis Accidents (DBAs) was performed. DBAs are very low probability hypothetical events whose characteristics and consequences are used in the design of the plant, so that the plant can mitigate their consequences to within acceptable regulatory limits. For BWR licensing evaluations, capability is demonstrated for coping with the range of hypothetical pipe break sizes in the largest recirculation, steam, and feedwater lines, a postulated break in one of the ECCS lines, and the most limiting small lines. This break range bounds the full spectrum of large and small, high and low energy line breaks. The evaluation also accommodates a single active equipment failure in addition to the postulated LOCA. Several of the most significant licensing assessments are made using these LOCA ground rules. These assessments are challenges to fuel, challenges to containment, and DBA radiological consequences.

- Challenges to Fuel

  The ECCS is described in USAR Section 6.3, "Emergency Core Cooling System." The ECCS is designed to provide protection against a postulated LOCA caused by ruptures in the primary system piping. The ECCS performance under all LOCA conditions, and their analysis models, satisfy the requirements of 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors" and 10 CFR 50 Appendix K, "ECCS Evaluation Models." The ECCS performance evaluation, described in Section 4.3, "Emergency Core Cooling System Performance," of Attachment E, was conducted through application of 10 CFR 50, Appendix K. This evaluation demonstrates the continued conformance to the acceptance criteria of 10 CFR 50.46. As mentioned above, a complete spectrum of pipe breaks is investigated from the largest recirculation line down to the most limiting small line break. The effect of the increased power level on the calculated peak cladding temperature (PCT) has been shown to be less than 20 °F as discussed in Section 4.3 of Attachment E. The increase PCT consequences for EPU remain within the fuel design limits and below the regulatory criteria. Therefore, the ECCS safety margin is not affected by EPU conditions.

- Challenges to Containment

The containment analyses are described in USAR Section 6.2, "Containment Systems." The plant containment evaluation is described in Section 11.4.2.7, "Challenges to Containment," of Attachment E. The primary criteria of merit are the maximum containment pressure calculated during the course of the LOCA and maximum suppression pool temperature for long-term cooling in accordance with 10 CFR 50, Appendix A, "General Design Criteria for Nuclear Power Plants," Criterion 38, "Containment Heat Removal."

Table 4-1, "DBA-LOCA Containment Performance Results," of Attachment E provides the results of the analyses of the plant containment responses to the most severe LOCAs. The effect of EPU on the peak values for containment pressure and temperature confirms the suitability of the plant for operation at EPU. Also, the effects of EPU on the conditions that affect the containment dynamic loads are determined, and the plant is judged satisfactory for EPU operation. The change in short-term containment response is negligible. Because there will be more residual heat with the EPU, the containment long-term response slightly increases. However, containment pressures and temperatures remain below their design limits following any DBA, and thus, the containment and its cooling systems are judged to be satisfactory for EPU operation.

- Radiological Consequences

The USAR provides the radiological consequences for each DBA. The magnitude of the potential consequences is dependent upon the quantity of fission products released to the environment, atmospheric dispersion factors and the dose exposure pathways. The atmospheric dispersion factors and the dose exposure pathways do not change. Therefore, the only factor, which could influence the magnitude of the consequences, is the quantity of activity released to the environment. This quantity is a product of the activity released from the core and the transport mechanisms between the core and the effluent release point. The transport mechanisms between the source region and the effluent release point are unchanged by EPU.

As discussed in Section 11.4.2.8, "Design Basis Accident Radiological Consequences," of Attachment E, the events evaluated are the LOCA, the Main Steam Line Break Accident (MSLBA), the Fuel Handling Accident (FHA), the CRDA, and the Instrument Line Break Accident (ILBA).

The EPU will not change the radiological consequences of a MSLBA, since the quantity of activity in the primary coolant and in the offgas used in the evaluation of these postulated events, remain unaffected by uprate conditions. The activity in the primary coolant is based on TS limits. These TS limits remain unchanged for EPU conditions. The offgas activity release is dependent on the fuel design and thus, is not affected by uprate conditions.

The EPU will not change the radiological consequences of an ILBA, since the quantity of coolant mass discharged to the environment is dependent upon changes in the operating pressure. The ILBA is not a limiting event. For the ILBA, increased mass loss would only occur if the operating pressure were increased. Since the requested EPU does not need or include an increase in operating pressure, the consequences of an ILBA do not change.

For the remaining DBAs, the primary parameter of importance is the activity released from the fuel. Because the mechanism of fuel failure is not influenced by the EPU, the only parameter of importance is the actual inventory of fission products in the fuel rod. The only parameter affecting fuel inventory is the increase in thermal power. Thus, the increase in the quantity of fission products can be assumed to be proportional to the increase in power.

The DBA, which has historically been limiting from a radiological viewpoint, is the LOCA, for which Regulatory Guide 1.3, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss of Coolant Accident for Boiling Water Reactors," or its equivalent, has been applied. For this accident, it is assumed that 100% of the noble gases and 50% of the iodines in the core are released to the primary containment. These release fractions are not influenced by the EPU. As shown in Section 9, "Reactor Safety Performance Evaluations," of Attachment E, these consequences remain below regulatory guidelines. The EPU LOCA evaluation results include the 2% power uncertainty factor from Regulatory Guide 1.49.

The results of all radiological analyses remain below the 10 CFR 100, "Reactor site criteria," guideline values. Therefore, all radiological safety margins are maintained.

Transient Analysis

The effects of plant transients are evaluated in Section 9.1, "Reactor Transients," of Attachment E, by investigating a number of disturbances of process variables and malfunctions or failures of equipment according to a scheme of postulating initiating events. These events are primarily evaluated against the MCPR SL. The MCPR SL is determined using NRC approved methods. The most limiting transient is slightly more severe when initiated from the uprated power level and results in a slightly larger change in MCPR than when initiated from the current power level. The result is less than a 0.03 change in MCPR. The Operating Limit MCPR is increased appropriately to assure that the MCPR SL is not challenged if any transient is initiated from the uprated power level. In addition, the limiting transients are analyzed for each specific fuel cycle. Licensing acceptance criteria are not exceeded. Therefore, the margin of safety is not affected by the EPU.

Environmental Qualification

As discussed in Section 11.4.2.12, "Equipment Qualification," of Attachment E, plant equipment and instrumentation have been evaluated against the criteria appropriate for EPU. Significant groups and/or types of equipment have been justified for the EPU by generic evaluations. In some cases, the qualification envelope did not change significantly due to EPU. A process has been developed to ensure qualification of the equipment whose current qualification does not already bound the EPU conditions.

Fire Protection

A plant-specific evaluation assuming EPU conditions was performed to demonstrate safe shutdown capability in the event of a fire. As discussed in Section 6.7.1, "Fire Events," of Attachment E, the results demonstrate that EPU has no adverse impact on the ability to achieve and maintain safe shutdown in the event of a fire.

Instrumentation

The control and instrumentation signal ranges and analytical limits for setpoints are evaluated to establish the effects of the changes in various process parameters such as power, neutron flux, steam flow and feedwater flow. Analyses are performed to determine the need for setpoint changes for various functions such as Main Steam Line High Flow isolation setpoints. In general, setpoints are changed only to maintain adequate operating margins between plant operating parameters and trip values, and only if satisfactory safety performance is demonstrated.

The instruments and controls that directly interact with or control the reactor are usually considered within the Nuclear Steam Supply System (NSSS). The NSSS process variables, instrument setpoints and Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Power Plants to Assess Plant Conditions During and Following an Accident," Revision 3, instrumentation that could be affected by the EPU were evaluated. As part of EPU implementation, the GE setpoint methodology was used to generate the allowable values and nominal trip setpoints related to the analytical limit changes.

TS instrument allowable values and/or setpoints are those sensed variables, which initiate protective actions. The determination of instrument allowable values and setpoints is based on plant operating experience and the conservative analytical limits used in specific licensing safety analyses. The settings are selected with sufficient margin to preclude inadvertent initiation of the protective action, while assuring that adequate operating margin is maintained between the system settings and the actual limits.

Increases in the core thermal power and steam flow affect some instrument setpoints, as described in Section 5.3, "Instrumentation Setpoints," of Attachment E. These setpoints were adjusted to maintain comparable differences between system settings and actual limits, and were reviewed to assure that adequate operational flexibility and necessary safety functions are maintained at the uprated power level.

F.2. TS Definition of Rated Thermal Power

Revising the licensed RTP in Section 1.1 is associated with the increase in RTP described in Section F.1 of this Attachment.

F.3 TS Section 2.1.1, "Reactor Core SLs"

The proposed changes to TS Section 2.1.1.1 revise the percent RTP at which the Reactor Core SLs are violated during operation at low pressures or low flows from ≤ 25% RTP to ≤ 21.6% RTP. The historical 25% RTP value associated with this TS is based on generic analysis using the highest average bundle power at 100% RTP. To maintain the same basis with respect to absolute thermal power, the Safety Limit percent

RTP threshold has been reduced corresponding to a higher average bundle power for the uprated power level. Specific details supporting these changes are discussed in Section 9.1, "Reactor Transients," of Attachment E.

F.4 TS Section 3.1.3, "Control Rod OPERABILITY"

The proposed changes to the Note preceding TS Section 3.1.3, Condition D revise the percent RTP at which two or more inoperable control rods, not in compliance with the BPWS and not separated by two or more Operable control rods, are required to be restored to Operable status. The percent RTP has been revised from > 20% RTP to > 16.7% RTP. For EPU, the thermal power applicability has been reduced corresponding to the ratio of the power increase (i.e., 2894/3473). Specific details supporting these changes are discussed in Section 5.1.3, "Rod Pattern Control System," of Attachment E.

F.5 TS Section 3.1.6, "Control Rod Pattern"

The proposed changes to the Applicability of TS Section 3.1.6 revise the percent RTP at which operable control rods shall comply with the requirements of the BPWS. The percent RTP has been revised from ≤ 20% RTP to ≤ 16.7% RTP. For EPU, the thermal power Applicability has been reduced corresponding to the ratio of the power increase (i.e., 2894/3473). Specific details supporting these changes are discussed in Section 5.1.3, "Rod Pattern Control System," of Attachment E.

F.6 TS Section 3.1.7, "Standby Liquid Control (SLC) System"

The proposed changes to TS Section 3.1.7, Figure 3.1.7-1 revise the SLC System weight percent concentration versus volume requirements. The minimum allowable concentration as shown in the Figure has been revised from a 10.3% to a 10.8%. Replacement of the sodium pentaborate figure is consistent with the ATWS analysis in Section 9.3.1. Specific details supporting these changes are discussed in Section 6.5, "Standby Liquid Control System," of Attachment E.

F.7 TS Section 3.2.1, "Average Planar Linear Heat Generation Rate (APLHGR)"

The proposed changes to the Applicability, Required Action, and SR of TS Section 3.2.1 revise the percent RTP at which all APLHGRs shall be less than or equal to the limits specified in the COLR. The percent RTP for the Applicability has been revised from ≥ 25% RTP to ≥ 21.6% RTP. The historical 25% RTP value associated with this TS is based on generic analysis using the highest (BWR/6) average bundle power at 100% RTP. To maintain the same basis with respect to absolute thermal power, the Safety Limit percent RTP threshold has been reduced corresponding to a higher average bundle power for the uprated power level. Specific details supporting these changes are discussed in Section 9.1, "Reactor Transients," of Attachment E.

F.8 TS Section 3.2.2, "Minimum Critical Power Ratio (MCPR)"

The proposed changes to the Applicability, Required Action, and SR of TS Section 3.2.2 revise the percent RTP at which all MCPRs shall be greater than or equal to the MCPR operating limits specified in the COLR. The percent RTP for the Applicability has been revised from ≥ 25% RTP to ≥ 21.6% RTP. The historical 25% RTP value associated with this TS is based on generic analysis using the highest (BWR/6) average bundle power at 100% RTP. To maintain the same basis with respect to absolute thermal power, the Safety Limit percent RTP threshold has been reduced corresponding to a higher average bundle power for the uprated power level. Specific details supporting these changes are discussed in Section 9.1, "Reactor Transients," of Attachment E.

F.9 TS Section 3.2.3, "Linear Heat Generation Rate (LHGR)"

The proposed changes to the Applicability, Required Action, and SR of TS Section 3.2.3 revise the percent RTP at which all LHGRs shall be less than or equal to the limits specified in the COLR. The percent RTP for the Applicability has been revised from ≥ 25% RTP to ≥ 21.6% RTP. The historical 25% RTP value associated with this TS is based on generic analysis using the highest (BWR/6) average bundle power at 100% RTP. To maintain the same basis with respect to absolute thermal power, the Safety Limit percent RTP threshold has been reduced corresponding to a higher average bundle power for the uprated power level. Specific details supporting these changes are discussed in Section 9.1, "Reactor Transients," of Attachment E.

F.10 TS Section 3.3.1.1, "RPS Instrumentation"

Changes to the RPS Instrumentation TS Functions are proposed as follows.

TS SR 3.3.1.1.2

The proposed changes to the Note preceding TS SR 3.3.1.1.2 and TS SR 3.3.1.1.2 revise the percent RTP at which the APRMs are verified calibrated to the reactor power calculated from a heat balance. The percent RTP has been revised from ≥ 25% RTP to ≥ 21.6% RTP. The historical 25% RTP value associated with this TS is based on generic analysis using the highest (BWR/6) average bundle power at 100% RTP. To maintain the same basis with respect to absolute thermal power, the percent RTP threshold has been reduced corresponding to a higher average bundle power for the uprated power level. Specific details supporting these changes are discussed in Section 9.1, "Reactor Transients," of Attachment E.

TS SR 3.3.1.1.16

The proposed changes to the TS SR 3.3.1.1.16 ensure that the scrams initiated from the TSV Closure and TCV Fast Closure, Trip Oil Pressure - Low Functions will not be not be inadvertently bypassed. The percent RTP has been revised from ≥ 40% RTP to ≥ 33.3% RTP. For EPU, the scram bypass power level has been reduced corresponding to the ratio of the power increase (i.e., 2894/3473). Specific details supporting these changes are discussed in Section 5.3.11, "TSV Closure and TCV Fast Closure Scram & RPT Bypasses," of Attachment E.

TS Table 3.3.1.1-1, Function 2.b

The proposed changes to TS Table 3.3.1.1-1, Function 2.b, revise the Allowable Values for the Average Power Range Monitor Flow Biased Simulated Thermal Power - High Function. The Allowable Value for two loop operation has been revised from ≤ 0.66 W + 67% RTP and ≤ 113% RTP to ≤ 0.55 W + 62% RTP and ≤ 113% RTP. The Allowable Value for single loop operation denoted in footnote (b) has been revised from ≤ 0.66 (W-8) + 51% RTP to ≤ 0.55 (W-8) + 42.5% TP. Consistent with the revised MELLLA power/flow map (Figure 2-1 of Attachment E), the Allowable Value equations for the flow biased APRM scram are revised. For EPU, the Allowable Value equations for the slope portions of the flow biased APRM scram remains the same in terms of absolute power and core flow. The Allowable Values for the intercept portions of the flow biased APRM scram have been adjusted to match the associated clamped analytical limit at the minimum operating core flow (approximating the recirculation drive flow) corresponding to the new rated power. Specific details supporting these changes are discussed in Section 5.3.5, "Neutron Monitoring System," of Attachment E.

TS Table 3.3.1.1-1, Function 5

The proposed changes to TS Table 3.3.1.1-1, Function 5, revise the percent RTP at which the Reactor Vessel Water Level - High, Level 8 Function shall be operable. The percent RTP has been revised from ≥ 25% RTP to ≥ 21.6% RTP. In addition, the proposed changes to the corresponding Required Action F.1 for this function revise the percent RTP from < 25% RTP to < 21.6% RTP. The historical 25% RTP value associated with this TS is based on generic analysis using the highest (BWR/6) average bundle power at 100% RTP. To maintain the same basis with respect to absolute thermal power, the percent RTP threshold has been reduced corresponding to a higher average bundle power for the uprated power level. Specific details supporting these changes are discussed in Section 9.1, "Reactor Transients," of Attachment E.

TS Table 3.3.1.1-1, Function 9

The proposed changes to TS Table 3.3.1.1-1, Function 9, revise the percent RTP at which the TSV Closure Function shall be operable. The percent RTP has been revised from ≥ 40% RTP to ≥ 33.3% RTP. In addition, the proposed changes to the corresponding Required Action E.1 for this function revise the percent RTP from < 40% RTP to < 33.3% RTP. For EPU, the thermal power Applicability has been reduced corresponding to the ratio of the power increase (i.e., 2894/3473). Specific details supporting these changes are discussed in Section 5.3.11, "TSV Closure and TCV Fast Closure Scram & RPT Bypasses," of Attachment E.

TS Table 3.3.1.1-1, Function 10

The proposed changes to TS Table 3.3.1.1-1, Function 10, revise the percent RTP at which the TCV Fast Closure, Trip Oil Pressure - Low shall be operable. The percent RTP has been revised from ≥ 40% RTP to ≥ 33.3% RTP. In addition, the proposed changes to the corresponding Required Action E.1 for this function revise the percent RTP from < 40% RTP to < 33.3% RTP. For EPU, the thermal power Applicability has been reduced corresponding to the ratio of the power increase (i.e., 2894/3473). Specific details supporting these changes are discussed in Section 5.3.11, "TSV Closure and TCV Fast Closure Scram & RPT Bypasses," of Attachment E.

F.11 TS Section 3.3.2.1, "Control Rod Block Instrumentation"

Changes to the Control Rod Block Instrumentation TS are proposed as follows.

TS SR 3.3.2.1.2

The proposed changes to TS SR 3.3.2.1.2 revise the percent RTP at which the RWL Function is verified to be functionally tested. The percent RTP has been revised from > 35% RTP to > 29.2% RTP. For EPU, the thermal power has been reduced corresponding to the ratio of the power increase (i.e., 2894/3473). Specific details supporting these changes are discussed in Section 5.3.12, "Rod Pattern Control System," of Attachment E.

TS SR 3.3.2.1.4

The proposed changes to TS SR 3.3.2.1.4 revise the percent RTP at which the RPC Function is verified to be functionally tested. The percent RTP has been revised from ≤ 20% RTP to ≤ 16.7% RTP. For EPU, the thermal power has been reduced corresponding to the ratio of the power increase (i.e., 2894/3473). Specific details supporting these changes are discussed in Section 5.1.3, "Rod Pattern Control System," of Attachment E.

TS SR 3.3.2.1.5

The proposed changes to TS SR 3.3.2.1.5 revise the percent RTP associated with the Allowable Value of the LPSP analog trip modules. The percent RTP has been revised from > 20% RTP and ≤ 35% RTP to > 16.7% RTP and ≤ 29.2% RTP. For EPU, the thermal power has been reduced corresponding to the ratio of the power increase (i.e., 2894/3473). Specific details supporting these changes are discussed in Sections 5.1.3 and 5.3.12, "Rod Pattern Control System," of Attachment E.

TS Table 3.3.2.1-1, Function 1.a

The proposed changes to TS Table 3.3.2.1-1, footnote (b) associated with Function 1.a revise the percent RTP at which the RWL shall be operable. The percent RTP for the Applicability has been revised from > 35% RTP to > 29.2% RTP. For EPU, the thermal power has been reduced corresponding to the ratio of the power increase (i.e., 2894/3473). Specific details supporting these changes are discussed in Section 5.3.12, "Rod Pattern Control System," of Attachment E.

TS Table 3.3.2.1-1, Function 1.b

The proposed changes to TS Table 3.3.2.1-1, footnote (c) associated with Function 1.b revise the percent RTP at which the RPC shall be operable. The percent RTP for the Applicability has been revised from ≤ 20% RTP to ≤ 16.7% RTP. For EPU, the thermal power has been reduced corresponding to the ratio of the power increase (i.e., 2894/3473). Specific details supporting these changes are discussed in Section 5.1.3, "Rod Pattern Control System," of Attachment E.

F.12 TS Section 3.3.4.1, "End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation"

The proposed changes to the Applicability, Required Action, and SR of TS Section 3.3.4.1 revise the percent RTP at which each EOC-RPT instrumentation (TSV Closure and TCV Fast Closure, Trip Oil Pressure - Low) Functions shall be operable. The percent RTP for the Applicability has been revised from ≥ 40% RTP to ≥ 33.3% RTP. For EPU, the thermal power has been reduced corresponding to the ratio of the power increase (i.e., 2894/3473). Specific details supporting these changes are discussed in Section 5.3.11, "TSV Closure and TCV Fast Closure Scram & RPT Bypasses," of Attachment E.

F.13 TS Section 3.3.6.1, "Primary Containment and Drywell Isolation Instrumentation"

The proposed changes to TS Table 3.3.6.1-1, Function 1.c, revise the Allowable Value for the Main Steam Line Flow – High Function. The Allowable Value has been revised from ≤ 178 psid to ≤ 284 psid. The current Analytical Limit for this function is based on 140% rated flow. For EPU, the Analytical Limit is based on 130% of the rated steam flow since the main steam line flow restrictors will limit the steam flow to 135% of uprated steam flow. Specific details supporting these changes are discussed in Section 5.3.4, "Main Steam High Flow Isolation," of Attachment E.

F.14 TS Section 3.4.1, "Recirculation Loops Operating"

The proposed changes to the LCO, Required Action, and Figure 3.4.1-1 of TS Section 3.4.1 revise the percent RTP and corresponding operating region at which recirculation loops (single or both) shall be in operation. The percent RTP for the LCO has been revised from ≤ 70% RTP to ≤ 58% RTP. Similarly, the percent thermal power axis on Figure 3.4.1-1 has been re-scaled corresponding to the percent increase in power. The new percent RTP and stability limits are required to maintain the existing thermal power level. For EPU, the thermal power has been reduced corresponding to the ratio of the power increase (i.e., 2894/3473). Specific details supporting these changes are discussed in Section 3.4, "Reactor Recirculation System," of Attachment E.

F.15 TS Section 3.4.3, "Jet Pumps"

The proposed changes to TS SR 3.4.3.1 revise the percent RTP at which jet pump operability shall be verified. The percent RTP has been revised from > 25% RTP to > 21.6% RTP. To maintain the same basis with respect to absolute thermal power, the percent RTP threshold has been reduced corresponding to a higher (BWR/6) average bundle power for the uprated power level. Specific details supporting these changes are discussed in Section 9.1, "Reactor Transients," of Attachment E.

F.16 TS Section 3.4.11, "RCS P/T Limits"

The proposed changes to the Note preceding TS SR 3.4.11.8 revise the percent RTP at which the difference between the bottom head coolant temperature and the RPV coolant temperature is verified ≤ 100 °F during single loop operation. The proposed changes to the Note preceding TS SR 3.4.11.9 revise the percent RTP at which the difference between the reactor coolant temperature in the recirculation loop not in operation and the RPV coolant temperature is verified ≤ 50 °F during single loop operation. The percent RTP for the Applicability has been revised from ≤ 30% RTP to ≤ 25% RTP for each of the SRs. For EPU, the thermal power has been reduced corresponding to the ratio of the power increase (i.e., 2894/3473). Specific details supporting these changes are discussed in Section 3.4, "Reactor Recirculation System," of Attachment E.

F.17 TS Section 3.7.6, "Main Turbine Bypass System"

The proposed changes to the Applicability and Required Action of TS Section 3.7.6 revise the percent RTP at which the Main Turbine Bypass System shall be operable. The percent RTP for the Applicability has been revised from ≥ 25% RTP to ≥ 21.6% RTP. The historical 25% RTP value associated with this TS is based on generic analysis using the highest (BWR/6) average bundle power at 100% RTP. To maintain the same basis with respect to absolute thermal power, the Safety Limit percent RTP threshold has been reduced corresponding to a higher average bundle power for the uprated power level. Specific details supporting these changes are discussed in Section 9.1, "Reactor Transients," of Attachment E.

G. IMPACT ON PREVIOUS SUBMITTALS

All submittals under review by the NRC were evaluated to determine the impact of this submittal. The only previous submittal impacted by this change is the Oscillation Power Range Monitor amendment request submitted June 1, 2001 (Reference 5). The Trip Enabled Region was modified for power uprate operation to maintain the pre-uprate absolute power and flow coordinates and therefore impacts the how this region is defined in the Technical Specification.

H. SCHEDULE REQUIREMENTS

We request approval of these proposed changes prior to March 23, 2002, to support preparation for the next refueling outage.

I. REFERENCES

(1) Licensing Topical Report, "Generic Guidelines for General Electric Boiling Water Reactor Extended Power Uprate," NEDC-32424P-A, Class III, February 1999.
(2) Licensing Topical Report, "Generic Evaluations of General Electric Boiling Water Reactor Extended Power Uprate, NEDC-32523P-A, Class III, February 2000, and Supplement 1, Volumes I and II.
(3) Letter from U.S. NRC to G. L. Sozzi (General Electric), "Staff Position Concerning General Electric Boiling-Water Reactor Extended Power Uprate Program," dated February 8, 1996.
(4) Letter from U.S.NRC to J. F. Quirk (General Electric), "Staff Safety Evaluation of General Electric Boiling Water Reactor (BWR) Extended Power Uprate Generic Analyses," dated September 14, 1998.
(5) Letter from J. M. Heffley (AmerGen) to U. S. NRC, "Request for Amendment to Appendix A, Technical Specifications for the Oscillation Power Range Monitor Instrumentation," dated June 1, 2001.

MARKED-UP OPERATING LICENSE AND TS PAGES FOR PROPOSED CHANGES

REVISED OPERATING LICENSE PAGES

3

REVISED TS PAGES

1.0-5
2.0-1
3.1-8
3.1-18
3.1-23
3.2-1
3.2-2
3.2-3
3.3-2
3.3-3
3.3-6
3.3-7
3.3-8
3.3-9
3.3-16
3.3-17
3.3-18
3.3-25
3.3-26
3.3-27
3.3-55
3.4-1
3.4-2
3.4-5
3.4-9
3.4-31
3.7-13

(4) AmerGen Energy Company, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

(5) AmerGen Energy Company, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and

(6) AmerGen Energy Company, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

AmerGen Energy Company, LLC is authorized to operate the facility at reactor core power levels not in excess of ~~2804~~ 3473 megawatts thermal (100 percent rated power) in accordance with the conditions specified herein.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 130 , are hereby incorporated into this license. AmerGen Energy Company, LLC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

1.1 Definitions (continued)

MINIMUM CRITICAL POWER RATIO (MCPR)	The MCPR shall be the smallest critical power ratio (CPR) that exists in the core for each class of fuel. The CPR is that power in the assembly that is calculated by application of the appropriate correlation(s) to cause some point in the assembly to experience boiling transition, divided by the actual assembly operating power.
MODE	A MODE shall correspond to any one inclusive combination of mode switch position, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.
OPERABLE—OPERABILITY	A system, subsystem, division, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, division, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of ~~2894~~ 3473 MWt.
REACTOR PROTECTION SYSTEM (RPS) RESPONSE TIME	The RPS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RPS trip setpoint at the channel sensor until de-energization of the scram pilot valve solenoids. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.

(continued)

2.0 SAFETY LIMITS (SLs)

2.1 SLs

2.1.1 Reactor Core SLs

2.1.1.1 With the reactor steam dome pressure < 785 psig or core flow < 10% rated core flow:

THERMAL POWER shall be ≤ ~~25%~~ 21.6% RTP.

2.1.1.2 With the reactor steam dome pressure ≥ 785 psig and core flow ≥ 10% rated core flow:

MCPR shall be ≥ 1.09 for two recirculation loop operation or ≥ 1.12 for single recirculation loop operation.

2.1.1.3 Reactor vessel water level shall be greater than the top of active irradiated fuel.

2.1.2 Reactor Coolant System Pressure SL

Reactor steam dome pressure shall be ≤ 1325 psig.

2.2 SL Violations

With any SL violation, the following actions shall be completed:

2.2.1 Within 1 hour, notify the NRC Operations Center, in accordance with 10 CFR 50.72.

2.2.2 Within 2 hours:

2.2.2.1 Restore compliance with all SLs; and

2.2.2.2 Insert all insertable control rods.

2.2.3 Within 24 hours, notify the plant manager and the corporate executive responsible for overall plant nuclear safety.

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Two or more withdrawn control rods stuck.	B.1	Be in MODE 3.	12 hours
C. One or more control rods inoperable for reasons other than Condition A or B.	C.1	--------NOTE--------- Inoperable control rods may be bypassed in RACS in accordance with SR 3.3.2.1.9, if required, to allow insertion of inoperable control rod and continued operation. --------------------	
		Fully insert inoperable control rod.	3 hours
	AND		
	C.2	Disarm the associated CRD.	4 hours
D. ---------NOTE--------- Not applicable when THERMAL POWER > ~~20%~~ 16.7% RTP. --------------------- Two or more inoperable control rods not in compliance with banked position withdrawal sequence (BPWS) and not separated by two or more OPERABLE control rods.	D.1	Restore compliance with BPWS.	4 hours
	OR		
	D.2	Restore control rod to OPERABLE status.	4 hours

(continued)

3.1 REACTIVITY CONTROL SYSTEMS

3.1.6 Control Rod Pattern

LCO 3.1.6 OPERABLE control rods shall comply with the requirements of the banked position withdrawal sequence (BPWS).

APPLICABILITY: MODES 1 and 2 with THERMAL POWER ≤ ~~20%~~ 16.7% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more OPERABLE control rods not in compliance with BPWS.	A.1 --------NOTE--------- Affected control rods may be bypassed in Rod Action Control System (RACS) in accordance with SR 3.3.2.1.9. --------------------- Move associated control rod(s) to correct position.	8 hours
	OR	
	A.2 Declare associated control rod(s) inoperable.	8 hours

(continued)

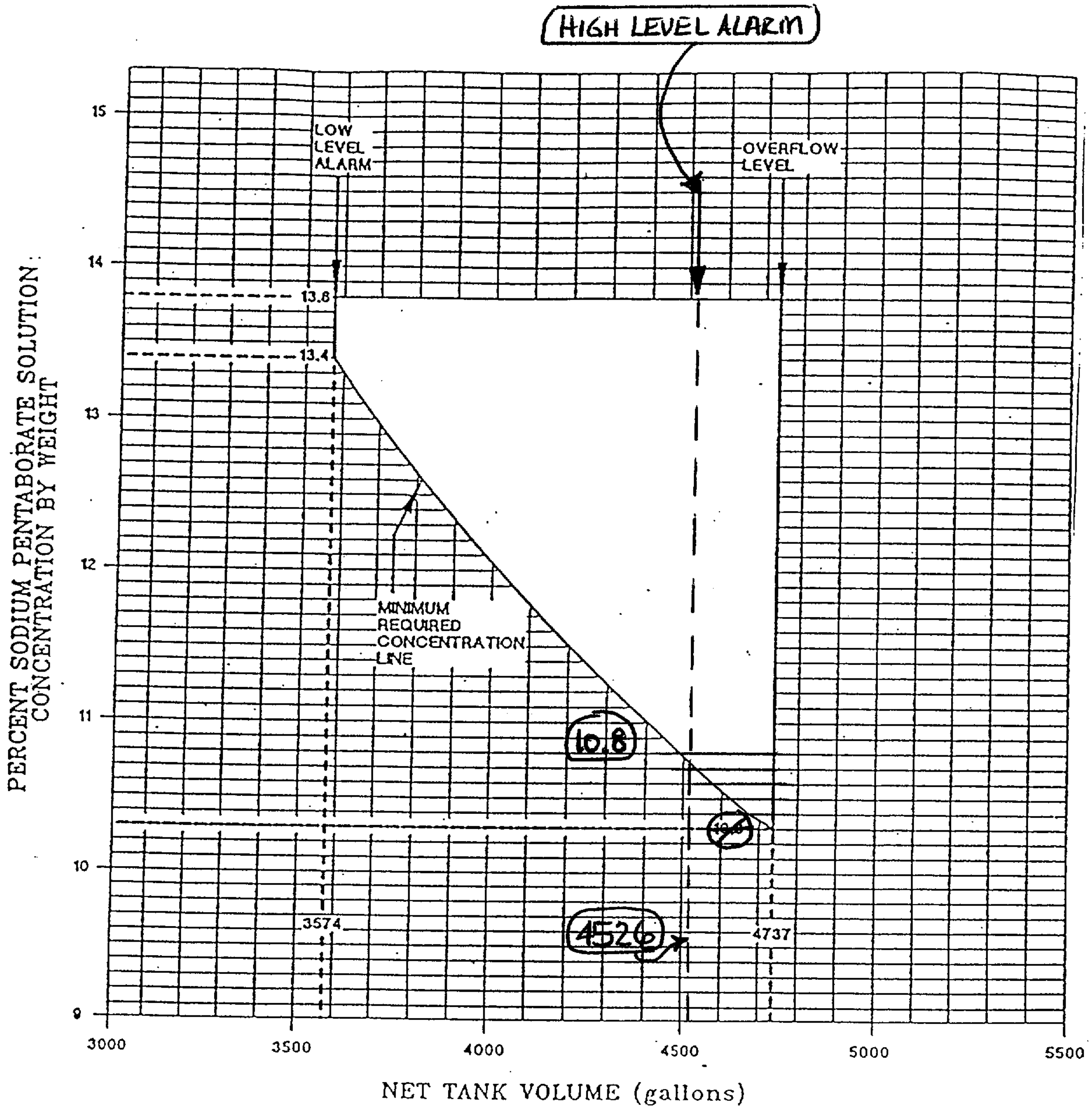

Figure 3.1.7-1 (page 1 of 1)
Weight Percent Sodium Pentaborate Solution
Concentration/Net Tank Volume Requirements

3.2 POWER DISTRIBUTION LIMITS

3.2.1 AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)

LCO 3.2.1 All APLHGRs shall be less than or equal to the limits specified in the COLR.

APPLICABILITY: THERMAL POWER ≥ ~~25%~~ 21.6% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any APLHGR not within limits.	A.1 Restore APLHGR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < ~~25%~~ 21.6% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.1.1 Verify all APLHGRs are less than or equal to the limits specified in the COLR.	Once within 12 hours after ≥ ~~25%~~ 21.6% RTP <u>AND</u> 24 hours thereafter

3.2 POWER DISTRIBUTION LIMITS

3.2.2 MINIMUM CRITICAL POWER RATIO (MCPR)

LCO 3.2.2 All MCPRs shall be greater than or equal to the MCPR operating limits specified in the COLR.

APPLICABILITY: THERMAL POWER ≥ ~~25%~~ 21.6% RTP.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Any MCPR not within limits.	A.1	Restore MCPR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1	Reduce THERMAL POWER to < ~~25%~~ 21.6% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.2.1	Verify all MCPRs are greater than or equal to the limits specified in the COLR.	Once within 12 hours after ≥ ~~25%~~ 21.6% RTP <u>AND</u> 24 hours thereafter

3.2 POWER DISTRIBUTION LIMITS

3.2.3 LINEAR HEAT GENERATION RATE (LHGR)

LCO 3.2.3 All LHGRs shall be less than or equal to the limits specified in the COLR.

APPLICABILITY: THERMAL POWER ≥ ~~25%~~ 21.6% RTP.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Any LHGR not within limits.	A.1	Restore LHGR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1	Reduce THERMAL POWER to < ~~25%~~ 21.6% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.3.1	Verify all LHGRs are less than or equal to the limits specified in the COLR.	Once within 12 hours after ≥ ~~25%~~ 21.6% RTP AND 24 hours thereafter

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	E.1	Reduce THERMAL POWER to < ~~40%~~ 33.3% RTP.	8 hours
F. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	F.1	Reduce THERMAL POWER to < ~~25%~~ 21.6% RTP.	8 hours
G. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	G.1	Be in MODE 2.	8 hours
H. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	H.1	Be in MODE 3.	12 hours
I. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	I.1	Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.1.1-1 to determine which SRs apply for each RPS Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains RPS trip capability.

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.1.1.2	-----NOTE----- Not required to be performed until 12 hours after THERMAL POWER ≥ 25% RTP. ----- 21.6% Verify the absolute difference between the average power range monitor (APRM) channels and the calculated power ≤ 2% RTP while operating at ≥ 25% RTP.	7 days
SR 3.3.1.1.3	Adjust the channel to conform to a calibrated flow signal.	7 days
SR 3.3.1.1.4	-----NOTE----- Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. ----- Perform CHANNEL FUNCTIONAL TEST.	7 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.16	Verify Turbine Stop Valve Closure and Turbine Control Valve Fast Closure Trip Oil Pressure-Low Functions are not bypassed when THERMAL POWER is ≥ ~~40%~~ 33.3% RTP.	18 months
SR 3.3.1.1.17	------------------NOTES------------------ 1. Neutron detectors are excluded. 2. For Functions 3, 4, and 5 in Table 3.3.1.1-1, the channel sensors are excluded. 3. The STAGGERED TEST BASIS Frequency for each Function shall be determined on a per channel basis. --- Verify the RPS RESPONSE TIME is within limits.	18 months on a STAGGERED TEST BASIS

Table 3.3.1.1-1 (page 1 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Intermediate Range Monitors					
a. Neutron Flux — High	2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.6 SR 3.3.1.1.7 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 122/125 divisions of full scale
	5(a)	4	I	SR 3.3.1.1.1 SR 3.3.1.1.5 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 122/125 divisions of full scale
b. Inop	2	4	H	SR 3.3.1.1.4 SR 3.3.1.1.15	NA
	5(a)	4	I	SR 3.3.1.1.5 SR 3.3.1.1.15	NA
2. Average Power Range Monitors					
a. Neutron Flux — High, Setdown	2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.7 SR 3.3.1.1.8 SR 3.3.1.1.11 SR 3.3.1.1.15	≤ 20% RTP
b. Flow Biased Simulated Thermal Power — High	1	4	G	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.3 SR 3.3.1.1.8 SR 3.3.1.1.9 SR 3.3.1.1.11 SR 3.3.1.1.14 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ ~~0.66 W + 67%~~ 0.55 W + 62% RTP and ≤ 113% RTP(b)
c. Fixed Neutron Flux — High	1	4	G	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.8 SR 3.3.1.1.9 SR 3.3.1.1.11 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 120% RTP
d. Inop	1,2	4	H	SR 3.3.1.1.8 SR 3.3.1.1.9 SR 3.3.1.1.15	NA

(continued)

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

(b) Allowable Value is ≤ ~~0.66~~ 0.55 (W-8) + ~~51%~~ 42.5% RTP when reset for single loop operation per LCO 3.4.1, "Recirculation Loops Operating."

Table 3.3.1.1-1 (page 2 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. Reactor Vessel Steam Dome Pressure — High	1,2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 1080 psig
4. Reactor Vessel Water Level — Low, Level 3	1,2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17	≥ 8.3 inches
5. Reactor Vessel Water Level — High, Level 8	≥ ~~25 %~~ 21.6% RTP	4	F	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 52.6 inches
6. Main Steam Isolation Valve — Closure	1	4	G	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17	≤ 12% closed
7. Drywell Pressure — High	1,2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 1.88 psig
8. Scram Discharge Volume Water Level — High					
a. Transmitter	1,2	4	H	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 40-1/4 inches for 1C11-N601A,B and ≤ 39-3/16 inches for 1C11-N601C,D
	5(a)	4	I	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 40-1/4 inches for 1C11-N601A,B and ≤ 39-3/16 inches for 1C11-N601C,D

(continued)

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

Table 3.3.1.1-1 (page 3 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
8. Scram Discharge Volume Water Level – High (continued)					
b. Float Switch	1,2	4	H	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 763 ft. 3-1/4 inches msl for 1C11-N013A,B and ≤ 763 ft. 1-11/16 inches msl for 1C11-N013C,D
	5(a)	4	I	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 763 ft. 3-1/4 inches msl for 1C11-N013A,B and ≤ 763 ft. 1-11/16 inches msl for 1C11-N013C,D
9. Turbine Stop Valve Closure	≥ ~~40%~~ 33.3% RTP	4	E	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.16 SR 3.3.1.1.17	≤ 7% closed
10. Turbine Control Valve Fast Closure, Trip Oil Pressure – Low	≥ ~~40%~~ 33.3% RTP	4	E	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.16 SR 3.3.1.1.17	≥ 465 psig
11. Reactor Mode Switch – Shutdown Position	1,2	4	H	SR 3.3.1.1.12 SR 3.3.1.1.15	NA
	5(a)	4	I	SR 3.3.1.1.12 SR 3.3.1.1.15	NA
12. Manual Scram	1,2	4	H	SR 3.3.1.1.9 SR 3.3.1.1.15	NA
	5(a)	4	I	SR 3.3.1.1.9 SR 3.3.1.1.15	NA

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

SURVEILLANCE REQUIREMENTS

-------------------------------------NOTES-------------------------------------

1. Refer to Table 3.3.2.1-1 to determine which SRs apply for each Control Rod Block Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains control rod block capability.

SURVEILLANCE		FREQUENCY
SR 3.3.2.1.1	------------------NOTE------------------ Not required to be performed until 1 hour after THERMAL POWER is greater than the RWL high power setpoint (HPSP). -- Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.2.1.2	------------------NOTE------------------ Not required to be performed until 1 hour after THERMAL POWER is > ~~35%~~ 29.2% RTP and less than or equal to the RWL HPSP. -- Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.2.1.3	------------------NOTE------------------ Not required to be performed until 1 hour after any control rod is withdrawn in MODE 2. -- Perform CHANNEL FUNCTIONAL TEST.	92 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.2.1.4	------------------NOTE------------------ Not required to be performed until 1 hour after THERMAL POWER is ≤ ~~20%~~ 16.7% RTP in MODE 1. -- Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.2.1.5	Calibrate the low power setpoint analog trip modules. The Allowable Value shall be > ~~20%~~ 16.7% RTP and ≤ ~~35%~~ 29.2% RTP.	92 days
SR 3.3.2.1.6	Verify the RWL high power Function is not bypassed when THERMAL POWER is > 70% RTP.	92 days
SR 3.3.2.1.7	Perform CHANNEL CALIBRATION.	18 months
SR 3.3.2.1.8	------------------NOTE------------------ Not required to be performed until 1 hour after reactor mode switch is in the shutdown position. -- Perform CHANNEL FUNCTIONAL TEST.	18 months
SR 3.3.2.1.9	Verify the bypassing and movement of control rods required to be bypassed in Rod Action Control System (RACS) is in conformance with applicable analyses by a second licensed operator or other qualified member of the technical staff.	Prior to and during the movement of control rods bypassed in RACS

Table 3.3.2.1-1 (page 1 of 1)
Control Rod Block Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS
1. Rod Pattern Control System			
a. Rod withdrawal limiter	(a)	2	SR 3.3.2.1.1 SR 3.3.2.1.6 SR 3.3.2.1.9
	(b)	2	SR 3.3.2.1.2 SR 3.3.2.1.5 SR 3.3.2.1.7 SR 3.3.2.1.9
b. Rod pattern controller	1[(c)], 2	2	SR 3.3.2.1.3 SR 3.3.2.1.4 SR 3.3.2.1.5 SR 3.3.2.1.7 SR 3.3.2.1.9
2. Reactor Mode Switch – Shutdown Position	(d)	2	SR 3.3.2.1.8

(a) THERMAL POWER greater than the RWL HPSP.

(b) THERMAL POWER > ~~35%~~ 29.2% RTP and less than or equal to the RWL HPSP.

(c) With THERMAL POWER ≤ ~~20%~~ 16.7% RTP.

(d) Reactor mode switch in the shutdown position.

3.3 INSTRUMENTATION

3.3.4.1 End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation

LCO 3.3.4.1 Four channels for each EOC-RPT instrumentation Function listed below shall be OPERABLE:

a. Turbine Stop Valve (TSV) Closure; and

b. Turbine Control Valve (TCV) Fast Closure, Trip Oil Pressure—Low.

APPLICABILITY: THERMAL POWER ≥ ~~40%~~ 33.3% RTP with any recirculation pump in fast speed.

ACTIONS

-----------------------------------NOTE-----------------------------------
Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one required channel inoperable.	A.1 Restore channel to OPERABLE status.	48 hours
	<u>OR</u>	
	A.2 --------NOTE--------- Not applicable if inoperable channel is the result of an inoperable breaker. --------------------	
	Place one channel in affected Function in trip.	48 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One or more Functions with two channels inoperable.	B.1	Place one channel in affected Function in trip.	6 hours
C. One or more Functions with three or more channels inoperable.	C.1	Restore two channels in affected Function to OPERABLE status.	2 hours
D. Required Action and associated Completion Time not met.	D.1	Remove the associated recirculation pump fast speed breaker from service.	8 hours
	OR		
	D.2	Reduce THERMAL POWER to < ~~40%~~ 33.3% RTP.	8 hours

SURVEILLANCE REQUIREMENTS

------------------------------------NOTE------------------------------------
When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours, provided the associated Function maintains EOC-RPT trip capability.

SURVEILLANCE		FREQUENCY
SR 3.3.4.1.1	Perform CHANNEL FUNCTIONAL TEST.	92 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.4.1.2	Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. TSV Closure: ≤ 7% closed; and b. TCV Fast Closure, Trip Oil Pressure—Low: ≥ 465 psig.	18 months
SR 3.3.4.1.3	Perform LOGIC SYSTEM FUNCTIONAL TEST, including breaker actuation.	18 months
SR 3.3.4.1.4	Verify TSV Closure and TCV Fast Closure, Trip Oil Pressure—Low Functions are not bypassed when THERMAL POWER is ≥ ~~40%~~ 33.3% RTP.	18 months
SR 3.3.4.1.5	-------------------NOTE------------------- The STAGGERED TEST BASIS Frequency shall be determined on a per Function basis. -- Verify the EOC-RPT SYSTEM RESPONSE TIME is within limits.	18 months on a STAGGERED TEST BASIS

Table 3.3.6.1-1 (page 1 of 6)
Primary Containment and Drywell Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION F.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Main Steam Line Isolation					
a. Reactor Vessel Water Level — Low Low Low, Level 1	1,2,3	4	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6 SR 3.3.6.1.7	≥ -147.7 inches
b. Main Steam Line Pressure — Low	1	4	H	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6 SR 3.3.6.1.7	≥ 837 psig
c. Main Steam Line Flow — High	1,2,3	4	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6 SR 3.3.6.1.7	≤ 284 psid
d. Condenser Vacuum — Low	1,2[(a)], 3[(a)]	4	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.5 SR 3.3.6.1.6	≥ 7.6 inches Hg vacuum
e. Main Steam Tunnel Temperature — High	1,2,3	4	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 171°F
f. Main Steam Line Turbine Building Temperature — High	1,2,3	4	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	Modules 1-4 ≤ 142°F, Module 5 ≤ 150°F
g. Manual Initiation	1,2,3	4	J	SR 3.3.6.1.6	NA

(continued)

(a) With any turbine stop valve not closed.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.1 Recirculation Loops Operating

LCO 3.4.1

A. Two recirculation loops shall be in operation with:

1. Matched flows; and
2. Total core flow and THERMAL POWER within limits.

OR

B. One recirculation loop shall be in operation with:

1. THERMAL POWER ≤ ~~70%~~ RTP; 58%
2. Total core flow and THERMAL POWER within limits;
3. Required limits modified for single recirculation loop operation as specified in the COLR; and
4. LCO 3.3.1.1, "Reactor Protection System (RPS) Instrumentation," Function 2.b (Average Power Range Monitors Flow Biased Simulated Thermal Power—High), Allowable Value of Table 3.3.1.1-1 reset for single loop operation.

---NOTE---
Required limit and setpoint modifications for single recirculation loop operation may be delayed for up to 12 hours after transition from two recirculation loop operation to single recirculation loop operation.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Recirculation loop jet pump flow mismatch not within limits.	A.1 Shut down one recirculation loop.	2 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Total core flow as a function of THERMAL POWER within Region A or B of Figure 3.4.1-1.	B.1 Determine Average Power Range Monitor (APRM) and Local Power Range Monitor (LPRM) neutron flux noise levels.	Once per 8 hours AND 30 minutes after an increase of ≥ 5% RTP
C. Total core flow as a function of THERMAL POWER within Region B of Figure 3.4.1-1. AND APRM or LPRM neutron flux noise level > 3 times established baseline noise level.	C.1 Restore APRM and LPRM neutron flux noise level to ≤ 3 times established baseline levels.	2 hours
D. Total core flow as a function of THERMAL POWER within Region A of Figure 3.4.1-1.	D.1 Restore total core flow as a function of THERMAL POWER to within Region B or C of Figure 3.4.1-1.	4 hours
E. THERMAL POWER > ~~70%~~ 58% RTP during single recirculation loop operation.	E.1 Reduce THERMAL POWER to ≤ ~~70%~~ 58% RTP.	4 hours

(continued)

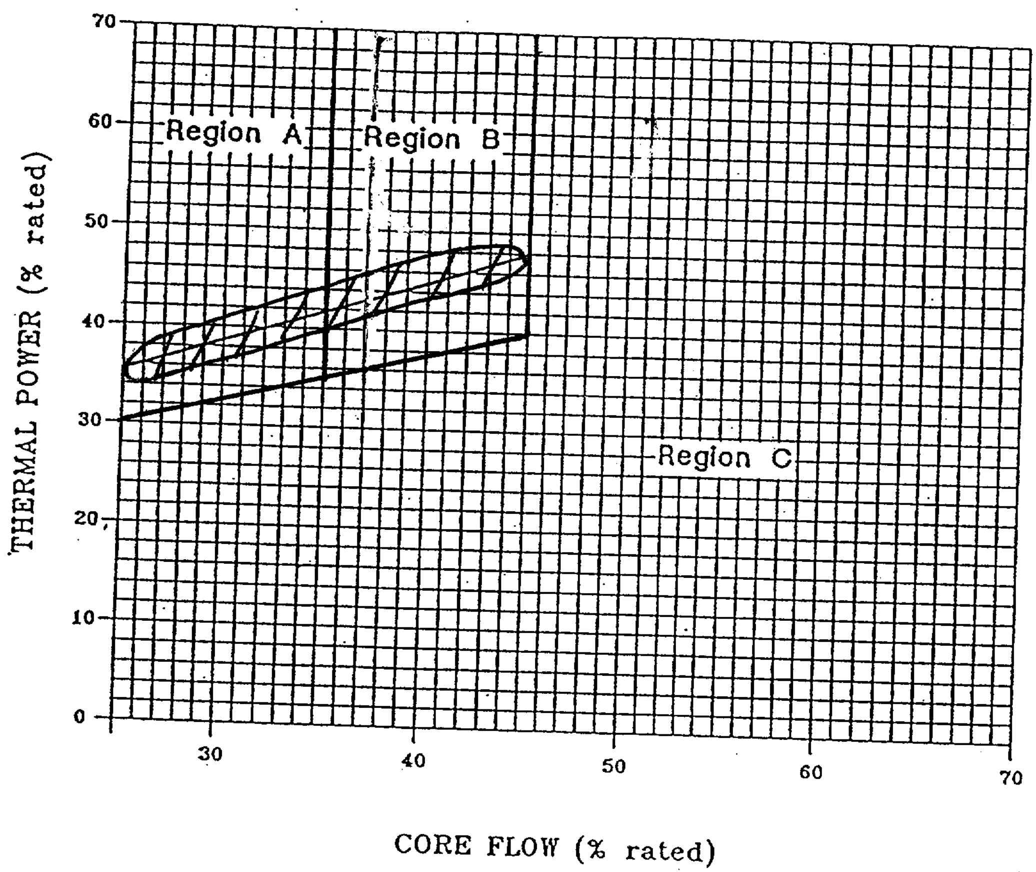

Figure 3.4.1-1 (page 1 of 1)
Thermal Power/Core Flow Stability Regions

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.3.1	-------------------NOTES------------------- 1. Not required to be performed until 4 hours after associated recirculation loop is in operation. 2. Not required to be performed until 24 hours after > ~~25%~~ 21.6% RTP. --	
	Verify at least two of the following criteria (a, b, and c) are satisfied for each operating recirculation loop: a. Recirculation loop drive flow versus flow control valve position differs by ≤ 10% from established patterns. b. Recirculation loop drive flow versus total core flow differs by ≤ 10% from established patterns. c. Each jet pump diffuser to lower plenum differential pressure differs by ≤ 20% from established patterns, or each jet pump flow differs by ≤ 10% from established patterns.	24 hours

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.11.8	-------------------NOTE------------------- Only required to be met in single loop operation during increases in THERMAL POWER or recirculation loop flow with THERMAL POWER ≤ ~~30%~~ 25% of RTP or recirculation loop flow in the operating loop ≤ 30% of rated flow. -- Verify the difference between the bottom head coolant temperature and the RPV coolant temperature is ≤ 100°F.	Once within 15 minutes prior to an increase in THERMAL POWER or an increase in loop flow
SR 3.4.11.9	-------------------NOTE------------------- Only required to be met in single loop operation during increases in THERMAL POWER or recirculation loop flow with THERMAL POWER ≤ ~~30%~~ 25% of RTP or recirculation loop flow in the operating loop ≤ 30% of rated flow, and with the idle recirculation loop not isolated from the RPV. -- Verify the difference between the reactor coolant temperature in the recirculation loop not in operation and the RPV coolant temperature is ≤ 50°F.	Once within 15 minutes prior to an increase in THERMAL POWER or an increase in loop flow

3.7 PLANT SYSTEMS

3.7.6 Main Turbine Bypass System

LCO 3.7.6 The Main Turbine Bypass System shall be OPERABLE.

APPLICABILITY: THERMAL POWER ≥ ~~25%~~ 21.6% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Main Turbine Bypass System inoperable.	A.1 Restore Main Turbine Bypass System to OPERABLE status.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < ~~25%~~ 21.6% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.6.1	Verify one complete cycle of each main turbine bypass valve.	31 days
SR 3.7.6.2	Perform a system functional test.	18 months
SR 3.7.6.3	Verify the TURBINE BYPASS SYSTEM RESPONSE TIME is within limits.	18 months

INFORMATION SUPPORTING A FINDING OF NO SIGNIFICANT HAZARDS CONSIDERATION

According to 10 CFR 50.92, "Issuance of Amendment," paragraph (c) a proposed amendment to an operating license involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not:

(1) Involve a significant increase in the probability of occurrence or consequences of an accident previously evaluated; or,

(2) Create the possibility of a new or different kind of accident from any previously analyzed; or,

(3) Involve a significant reduction in a margin of safety.

In support of this determination, an evaluation of each of the three criteria set forth in 10 CFR 50.92 is provided below regarding the proposed changes.

Overview:

AmerGen Energy Company, LLC (i.e., AmerGen) proposes changes to the Facility Operating License No. NPF-62 and Appendix A to the Facility Operating License, the Technical Specifications (TS), for Clinton Power Station (CPS). The proposed changes revise the maximum power level specified in the CPS Operating License and the TS definition of rated thermal power. In addition, other TS changes associated with extended power uprate (EPU) analyses are proposed as follows.

- The Weight Percent Sodium Pentaborate Solution Concentration / Net Tank Volume Requirements Figure is revised consistent with the Anticipated Transient Without Scram (ATWS) analysis.
- Allowable Values for the Average Power Range Monitor Flow Biased Simulated Thermal Power – High Function (i.e., Reactor Protection System) and the Main Steam Line Flow – High Function (i.e., Primary Containment and Drywell Isolation) have been revised consistent with the current setpoint methodology and EPU related change to the Analytical Limits for these function.

AmerGen has completed comprehensive EPU analyses to increase the licensed power level from 2894 Megawatts-thermal (MWt) to 3473 MWt. This represents an increase of approximately 20 percent rated core thermal power over the current 100 percent power level of 2894 MWt.

The EPU program included a reanalysis or evaluation of design basis accidents (DBAs), non-Loss of Coolant Accidents (LOCAs), Nuclear Steam Supply System (NSSS) and balance of plant (BOP) structures, systems, and components. Major NSSS and BOP components and systems have been assessed with respect to the bounding conditions expected for operation at the uprated power level. The results of the analyses and evaluations have yielded acceptable results and demonstrated that all design basis acceptance criteria will continue to be met during uprated power operations. The detailed analysis is presented in General Electric (GE) Report NEDC-32989P, "Safety Analysis Report for Clinton Power Station Extended Power Uprate," dated June 2001.

The analyses and evaluations supporting the proposed changes directly related to power uprate were completed using the guidelines in GE Licensing Topical Report, NEDC-32424P-A, "Generic Guidelines for General Electric Boiling Water Reactor Extended Power Uprate," dated February 1999. Certain issues are evaluated generically and have been submitted to the NRC in GE Licensing Topical Report, NEDC-32523P-A, "Generic Evaluations of General Electric Boiling Water Reactor Extended Power Uprate," dated February 2000. The NRC has approved both of these topical reports as provided in letters to G. L. Sozzi (GE), "Staff Position Concerning General Electric Boiling-Water Reactor Extended Power Uprate Program," dated February 8, 1996 and J. F. Quirk (GE), "Staff Safety Evaluation of General Electric Boiling Water Reactor (BWR) Extended Power Uprate Generic Analyses," dated September 14, 1998.

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

Implementation of Extended Power Uprate (EPU) will not result in an increase in the probability of equipment failure. An evaluation of the Boiling Water Reactor (BWR) probabilistic risk assessments concludes that the calculated core damage frequencies do not significantly change due to EPU. Scram setpoints are established such that there is no significant increase in scram frequency due to EPU. No new challenges to safety-related equipment result from the EPU. Therefore, the proposed changes do not have any affect on the probability of an accident previously evaluated.

The spectrum of hypothetical accidents and transients has been investigated, and are shown to meet the plant's currently licensed regulatory criteria. In the area of core design, for example, the fuel operating limits such as Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) and Safety Limit Minimum Critical Power Ratio (SLMCPR) are still met. Fuel reload analyses will show that plant transients meet the criteria accepted by the NRC as specified in NEDO-24011, "GESTAR II." Challenges to fuel are evaluated, and shown to still meet the criteria of 10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Power Reactors" and 10 CFR 50, Appendix K, "ECCS Evaluation Models." The doses associated with the accidents and transients as analyzed for EPU conditions do not significantly increase as a result of these changes.

The proposed TS changes directly support the extended power level increase. The proposed changes have been evaluated to ensure that the plant responses to accidents and transients remain within acceptable criteria. Thus, the proposed changes do not involve a significant increase in the consequences of an accident previously evaluated.

Therefore, the proposed changes to increase the power level will not significantly increase the probability or consequences of an accident previously evaluated.

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

Equipment that could be affected by the EPU have been evaluated. No new operating mode, safety-related equipment lineup, accident scenario or equipment failure mode is involved with EPU. The full spectrum of accident considerations, defined in Regulatory Guide 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants LWR Edition," Revision 3, has been evaluated, and no new or different kind of accident has been identified. The EPU uses already developed technology and NRC approved safety analysis methodology, and applies them within the capabilities of already existing plant equipment in accordance with presently existing regulatory and industry criteria. Industry experience with BWRs with higher power levels than described herein has not identified any new power dependent related accidents.

Therefore, the proposed changes to increase the power level will not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

EPU affects only design and operational margins. Challenges to the fuel, reactor coolant pressure boundary, and containment were reanalyzed for EPU conditions. The fuel integrity is maintained by meeting existing design and regulatory limits. The calculated loads of all affected structures, systems and components, including the reactor coolant pressure boundary, remain within design allowables for all DBA categories. The containment performance analysis demonstrates that the containment remains within all of its design limits following the most severe DBA. The proposed changes have been evaluated to ensure that no fuel thermal limit is exceeded, thus the margin of safety is not affected.

Because the plant reactions to transients and accidents do not result in exceeding the presently approved NRC acceptance limits, these changes do not involve a significant reduction in a margin of safety.

Therefore, the proposed changes to increase the power level, as discussed herein, will not involve a significant reduction in a margin of safety.

Conclusions:

An EPU to 120 percent of original rated power has been investigated. The method for achieving higher power is to slightly increase some plant operating parameters. The plant licensing challenges have been evaluated and demonstrate how this uprate can be accommodated without a significant increase in the probability or consequences of an accident previously evaluated, without creating the possibility of a new or different kind of accident from any accident previously evaluated, and without exceeding any presently existing regulatory limits or acceptance criteria applicable to the plant which might cause a reduction in a margin of safety.

This evaluation concludes that extended power uprate does not involve a Significant Hazards Consideration.

INFORMATION SUPPORTING AN ENVIRONMENTAL ASSESSMENT

AmerGen Energy Company, LLC (i.e., AmerGen) has evaluated this proposed change against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.21, "Criteria for and identification of licensing and regulatory actions requiring environmental assessments." AmerGen has determined that this proposed change meets the criteria for a categorical exclusion set forth in 10 CFR 51.22, "Criterion for categorical exclusion; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review," paragraph (c)(9), and as such, has determined that no irreversible consequences exist in accordance with 10 CFR 50.92, "Issuance of amendment," paragraph (b). This determination is based on the fact that this change is being proposed as an amendment to a license issued pursuant to 10 CFR 50, "Domestic Licensing of Production and Utilization Facilities," which changes a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, "Standards for Protection Against Radiation," or that changes an inspection or surveillance requirement, and the amendment meets the following specific criteria.

(i) The proposed changes involve no significant hazards consideration.

As demonstrated in Attachment C, this proposed changes do not involve a Significant Hazards Consideration.

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

The proposed changes will allow the Clinton Power Station (CPS) to operate at an uprated power level of 3473 megawatts thermal (MWt). This represents an increase of approximately 20 percent rated core thermal power over the current 100 percent power level of 2894 MWt. Operation at the proposed uprated conditions has been determined not to result in a significant increase in thermal effluents from the plant. There will be no significant increase in the amounts of any effluents released offsite. These changes do not increase the production, nor alter the flow path or method of disposal of radioactive waste or byproducts. Therefore, the proposed changes will not affect the types or increase the amounts of any effluents released offsite.

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

The proposed changes will allow CPS to operate at an uprated power level of 3473 MWt. This represents an increase of approximately 20 percent rated core thermal power over the current 100 percent power level of 2894 MWt. These changes will not result in a change in the level of controls or methodology used for processing of radioactive effluents or handling of solid radioactive waste, nor will the proposal result in any significant change in the normal radiation levels in the plant. Therefore, there will be no increase in individual or cumulative occupational radiation exposure resulting from these changes.

GE Affidavit for Withholding NEDC-32989P from Public Disclosure

General Electric Company

AFFIDAVIT

I, George B. Stramback, being duly sworn, depose and state as follows:

(1) I am Project Manager, Regulatory Services, General Electric Company ("GE") and have been delegated the function of reviewing the information described in paragraph (2) which is sought to be withheld, and have been authorized to apply for its withholding.

(2) The information sought to be withheld is contained in the GE proprietary report NEDC-32989P, *Safety Analysis Report for Clinton Power Station Extended Power Uprate,* Class III (GE Proprietary Information), dated June 2001. This document, taken as a whole, constitutes a proprietary compilation of information, some of it also independently proprietary, prepared by the General Electric Company. The independently proprietary elements are identified by bars marked in the margin adjacent to the specific material.

(3) In making this application for withholding of proprietary information of which it is the owner, GE relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4), 2.790(a)(4), and 2.790(d)(1) for "trade secrets and commercial or financial information obtained from a person and privileged or confidential" (Exemption 4). The material for which exemption from disclosure is here sought is all "confidential commercial information", and some portions also qualify under the narrower definition of "trade secret", within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975F2d871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704F2d1280 (DC Cir. 1983).

(4) Some examples of categories of information which fit into the definition of proprietary information are:

a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by General Electric's competitors without license from General Electric constitutes a competitive economic advantage over other companies;

b. Information which, if used by a competitor, would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product;

c. Information which reveals cost or price information, production capacities, budget levels, or commercial strategies of General Electric, its customers, or its suppliers;

d. Information which reveals aspects of past, present, or future General Electric customer-funded development plans and programs, of potential commercial value to General Electric;

e. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection.

Both the compilation as a whole and the marked independently proprietary elements incorporated in that compilation are considered proprietary for the reason described in items (4)a. and (4)b., above.

(5) The information sought to be withheld is being submitted to NRC in confidence. That information (both the entire body of information in the form compiled in this document, and the marked individual proprietary elements) is of a sort customarily held in confidence by GE, and has, to the best of my knowledge, consistently been held in confidence by GE, has not been publicly disclosed, and is not available in public sources. All disclosures to third parties including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in paragraphs (6) and (7) following.

(6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge. Access to such documents within GE is limited on a "need to know" basis.

(7) The procedure for approval of external release of such a document typically requires review by the staff manager, project manager, principal scientist or other equivalent authority, by the manager of the cognizant marketing function (or his delegate), and by the Legal Operation, for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside GE are limited to regulatory bodies, customers, and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary agreements.

(8) The information identified by bars in the margin is classified as proprietary because it contains detailed results and conclusions from these evaluations, utilizing analytical models and methods, including computer codes, which GE has developed, obtained NRC approval of, and applied to perform evaluations of transient and accident events in the GE Boiling Water Reactor ("BWR"). The development and approval of these system, component, and thermal hydraulic models and computer codes was achieved at a significant cost to GE, on the order of several million dollars.

The remainder of the information identified in paragraph (2), above, is classified as proprietary because it constitutes a confidential compilation of information, including detailed results of analytical models, methods, and processes, including computer codes, and conclusions from these applications, which represent, as a whole, an integrated process or approach which GE has developed, obtained NRC approval of, and applied to perform evaluations of the safety-significant changes necessary to demonstrate the regulatory acceptability of a given increase in licensed power output for a GE BWR. The development and approval of this overall approach was achieved at a significant additional cost to GE, in excess of a million dollars, over and above the very large cost of developing the underlying individual proprietary analyses.

To effect a change to the licensing basis of a plant requires a thorough evaluation of the impact of the change on all postulated accident and transient events, and all other regulatory requirements and commitments included in the plant's FSAR. The analytical process to perform and document these evaluations for a proposed power uprate was developed at a substantial investment in GE resources and expertise. The results from these evaluations identify those BWR systems and components, and those postulated events, which are impacted by the changes required to accommodate operation at increased power levels, and, just as importantly, those which are <u>not</u> so impacted, and the technical justification for not considering the latter in changing the licensing basis. The scope thus determined forms the basis for GE's offerings to support utilities in both performing analyses and providing licensing consulting services. Clearly, the scope and magnitude of effort of any attempt by a competitor to effect a similar licensing change can be narrowed considerably based upon these results. Having invested in the initial evaluations and developed the solution strategy and process described in the subject document GE derives an important competitive advantage in selling and performing these services. However, the mere knowledge of the impact on each system and component reveals the process, and provides a guide to the solution strategy.

(9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GE's competitive position and foreclose or reduce the availability of profit-making opportunities. The information is part of GE's comprehensive BWR technology base, and its commercial value extends beyond the original development cost. The value of the technology base goes beyond the extensive

physical database and analytical methodology and includes development of the expertise to determine and apply the appropriate evaluation process. In addition, the technology base includes the value derived from providing analyses done with NRC-approved methods, including justifications for not including certain analyses in applications to change the licensing basis.

GE's competitive advantage will be lost if its competitors are able to use the results of the GE experience to avoid fruitless avenues, or to normalize or verify their own process, or to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions. In particular, the specific areas addressed by any document and submittal to support a change in the safety or licensing bases of the plant will clearly reveal those areas where detailed evaluations must be performed and specific analyses revised, and also, by omission, reveal those areas not so affected.

While some of the underlying analyses, and some of the gross structure of the process, may at various times have been publicly revealed, enough of both the analyses and the detailed structural framework of the process have been held in confidence that this information, in this compiled form, continues to have great competitive value to GE. This value would be lost if the information as a whole, in the context and level of detail provided in the subject GE document, were to be disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources, including that required to determine the areas that are not affected by a power uprate and are therefore blind alleys, would unfairly provide competitors with a windfall, and deprive GE of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing its analytical process.

STATE OF CALIFORNIA)
) ss:
COUNTY OF SANTA CLARA)

George B. Stramback, being duly sworn, deposes and says:

That he has read the foregoing affidavit and the matters stated therein are true and correct to the best of his knowledge, information, and belief.

Executed at San Jose, California, this 15th day of June 2001.

George B. Stramback
General Electric Company

Subscribed and sworn before me this 15th day of June 2001.

VICKY D. SCHROER
Commission # 1224251
Notary Public - California
Santa Clara County
My Comm. Expires Jun 12, 2003

Notary Public, State of California

LIST OF PLANNED MODIFICATIONS REQUIRED TO SUPPORT POWER UPRATE

The following presents an overview of the currently planned facility changes necessary to achieve the target electrical output.

- Modify Isophase Bus Ducts
- Replace Main Power Transformer(s)
- Replace High Pressure and Low Pressure Turbine Rotor, Bucket, Diaphragm and Valves
- Upgrade Moisture Separator Reheaters To Provide 95% Moisture Effectiveness
- Revise Various Instrumentation Setpoints
- Increase Generator Hydrogen Pressure, Modify Control Settings and Replace Hydrogen Coolers
- Replace Turbine Generator Seal Oil System Valves and Gauges For 75 psig Pressure
- Upgrade Electro-Hydraulic Control System
- Increase Plant Service Water (WS) Flow to Stator Water Cooling System
- Install New Anode Transformer
- Reset Condenser Water Level Control Instrumentation
- Implement Motor-Driven Reactor Feedwater Pump Auto-start
- Modify Six Feedwater Pipe Supports Due To Transient Loading
- Modify Turbine Building Closed Cooling Water (TBCCW) System Pump Impeller To Accommodate Exciter And Bus Duct Cooler Modifications