AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, IL 60555

www.exeloncorp.com

AmerGen
An Exelon Company

10 CFR 50.90

RS-05-124

September 23, 2005

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-001

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

Subject: Additional Information Supporting the Request for Amendment to Technical Specifications for the Oscillation Power Range Monitor Instrumentation

References: (1) Letter from Keith R. Jury (AmerGen Energy Company, LLC) to U.S. NRC, "Request for Amendment to Appendix A, Technical Specifications for the Oscillation Power Range Monitor Instrumentation," dated April 1, 2005

(2) Letter from U.S. NRC to C. M. Crane (AmerGen Energy Company, LLC), "Clinton Power Station, Unit 1 – Request for Additional Information Re: Technical Specification Change for Long-Term Stability Solution – Oscillation Power Range Monitor Instrumentation," dated July 6, 2005

In Reference 1, AmerGen Energy Company, LLC (AmerGen) requested a change to the Technical Specifications (TS) for Clinton Power Station (CPS), Unit 1, to incorporate into the TS the Oscillation Power Range Monitor (OPRM) instrumentation. Specifically, Reference 1 proposed the addition of TS Section 3.3.1.3, "Oscillation Power Range Monitor (OPRM) Instrumentation" and revision of TS Sections 3.4.1, "Recirculation Loops Operating," and 5.6.5, "Core Operating Limits Report," to insert a new TS Section for the OPRM instrumentation, delete the current thermal hydraulic instability administrative requirements, and add the appropriate references for the OPRM trip setpoints and methodology.

In Reference 2, the NRC requested additional information to support their review of Reference 1. Attachment 1 to this letter provides the requested information. Attachment 2 provides a revised proposed Technical Specification 3.3.1.3.

AmerGen has reviewed the information supporting a finding of no significant hazards consideration that was previously provided in Attachment 1 of Reference 1. The supplemental information provided in this submittal does not affect the bases for concluding that the proposed license amendment does not involve a significant hazards consideration.

If you have any questions concerning this letter, please contact Mr. David Gullott at (630) 657-2819.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 23rd day of September 2005.

Respectfully,

Keith R. Jury
Director – Licensing and Regulatory Affairs
AmerGen Energy Company, LLC

Attachments:
1. Additional Information Supporting the Request for Amendment to Technical Specifications for the Oscillation Power Range Monitor Instrumentation
2. Revision to Proposed Technical Specifications Pages

## ATTACHMENT 1

Additional Information Supporting the Request for Amendment to Technical Specifications for the Oscillation Power Range Monitor Instrumentation

***Request 1***

*The NRC-approved topical report NEDO-32465-A, " BWR Owners' Group Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology for Reload Applications," dated August 1996, is a generic approval for the delta critical power ratio/initial critical power ratio vs. oscillation magnitude (DIVOM) correlation. Please provide a detailed description of the methodology for calculating the plant-specific DIVOM correlation and identify the NRC-approved methodologies used to calculate the Oscillation Power Range Monitor (OPRM) setpoints in Technical Specification (TS) 3.3.1.3.*

**Response 1**

A detailed description of the methodology used for calculating the plant-specific DIVOM correlation and OPRM setpoints used in Technical Specification (TS) 3.3.1.3 is provided on page 6 of Attachment 1 to Reference 1. As described in Attachment 1 to Reference 1, the Boiling Water Reactor Owners' Group (BWROG) Stability Long-Term Solution Option III methodology for establishing the OPRM period based detection algorithm (PBDA) trip setpoints is described in the NRC approved topical report NEDO-32465-A (Reference 2). The Option III methodology was originally licensed utilizing a generic DIVOM curve. However, for application to Clinton Power Station (CPS), a plant and cycle-specific DIVOM curve will be utilized. The acceptability of utilizing a plant and cycle-specific DIVOM curve is documented in BWROG letter BWROG-03048 (Reference 3).

The methodology for developing the DIVOM curve is described in Section 4.4 of Reference 2. For plant and cycle-specific application, the methodology for developing the DIVOM curve remains unchanged, except that plant and cycle-specific parameters (e.g., core power and flow, core loading, cycle energy, fuel types, etc.) are utilized in place of the generic fleet parameters. The values of other OPRM system parameters, such as the PBDA period confirmation setpoints in Table 3-1 of Reference 2, remain within their original acceptable range. The current values of these setpoints have been established based on recent industry operational experience of the Option III OPRM system. The PBDA setpoints in Table 3-2 of Reference 2 remain unchanged. As described in Section 4.4.4 of Reference 2, TRACG analyses will be performed to determine the relationship between the hot bundle oscillation magnitude and the change in critical power ratio (CPR), i.e., the DIVOM correlation. These analyses will utilize plant and cycle-specific inputs and parameters as described above.

***Request 2:***

*Please provide a detailed description of the implementation status of the OPRM system including the detailed procedures to finalize system calibration and trip setpoints based on the approach discussed in NEDO-32465-A, or an approach utilizing the plant-specific data. Please provide justification why the OPRM system which was installed in the spring of 1999 is not currently armed.*

**Response 2:**

The OPRM hardware was installed at CPS during the sixth refueling outage (i.e., RF-6) that ended in the spring of 1999. With the exception of the Reactor Protection System trip input, which is bypassed with a jumper, all OPRM functions have been active since that time.

The evaluations of the initial plant and cycle-specific DIVOM correlation and OPRM PBDA trip setpoints for CPS have not been completed at this time. These evaluations utilize the methodology discussed in Responses 1 and 4. Once the evaluations are complete, AmerGen will provide the CPS initial DIVOM correlation and OPRM PBDA trip setpoints to the NRC.

The final setpoints will be implemented in accordance with the plant's design control process. The required testing to verify proper setpoint implementation and to satisfy TS surveillance requirements will be performed in accordance with approved plant surveillance procedures.

Consistent with Reference 13 recommendations, the OPRM trip functions were not activated following restart from refueling outage RF-6 in Spring 1999 in order to allow evaluation of the performance of the OPRM algorithms without the risk of spurious scrams. During this evaluation period, Asea Brown Boveri (ABB) Combustion Engineering notified the NRC of a design defect in the OPRM system in accordance with 10 CFR 21, "Reporting of defects and noncompliance," as documented in Reference 4. As a result, the scheduled date for placing the reactor scram capability associated with the system into service was deferred in order to make the necessary modifications to the CPS OPRM system. Once these modifications were made, functional testing resumed. On June 1, 2001, AmerGen submitted a license amendment request (Reference 5) to incorporate the OPRM instrumentation into the TS to support activating the instrument trip functions.

During this second evaluation period, in 2001, General Electric (GE) Company initiated a report in accordance with 10 CFR 21 (Reference 6) concerning stability reload licensing calculations that support the development of setpoints for the OPRM trip function. Therefore, the Reference 5 amendment request was withdrawn (Reference 7) and the OPRM trip functions were not armed pending resolution of this reported condition that was resolved as described in Reference 8. A second attempt to incorporate the OPRM instrumentation into the CPS TS was made in conjunction with the Maximum Extended Load Line Limit Analysis Plus (MELLLA+) amendment request submitted on May 1, 2003 (Reference 9). This amendment request was subsequently withdrawn (Reference 10) due to delays in the approval of the generic MELLLA+ licensing topical reports.

While awaiting resolution of the 10 CFR 21 issues, AmerGen has continued to operate CPS with the OPRM instrumentation monitoring the reactor core for thermal hydraulic instability oscillations using the Option III methodology. During this time, the OPRM trip functions have not been activated, however, AmerGen has continued to implement the Interim Corrective Actions (ICAs) to detect and suppress power oscillations.

## ATTACHMENT 1

Additional Information Supporting the Request for Amendment to Technical Specifications for the Oscillation Power Range Monitor Instrumentation

***Request 3:***

*Please provide detailed results of the system tests that support the accuracy and operability of the current OPRM instrumentation. Specifically, please include the available data obtained during shutdowns and subsequent startups from outages since the OPRM system was installed in 1999.*

**Response 3:**

Calibration surveillance testing was performed on all OPRM modules to confirm acceptable operation after final factory hardware and software up-grades were implemented in 1999. Initial OPRM setpoints were established based on industry experience at the time. The system was not released to Operations or made operable because CPS was still within the performance monitoring period for the OPRM.

During the monitoring period, factory provided hardware and software revisions were installed, analyses of downloaded raw OPRM data sets were performed, and setpoints were revised. The analyses included cataloging and documenting of the initial OPRM system data for use during future analyses, cataloging and documenting Cycle 7 shutdown and Cycle 8 startup data, and evaluation of the OPRM system performance characteristics and resolve indications of anomalous performance. The current setpoints were installed during the refueling outage in November 2000.

CPS has received the "OPRM Oscillation Detected" annunciator during start-up on two separate occasions, once in July 2001 and once in March 2005. It was determined in each case that there were no sustained core instabilities. The alarm setpoint is currently set low and therefore sensitive to normal core activity. Industry experience has shown that at low alarm settings, it is not uncommon to receive alarms during start-up. CPS has not observed sustained oscillation growth causing an OPRM trip due to core activity at any time. The "OPRM Oscillation Detected" annunciator setpoint will be revised to a significantly higher level for Cycle 11 in accordance with guidance in Reference 16. Based on preliminary information from GE, the safety related setpoints, (PBDA trip amplitude (Sp) and maximum confirmation count (Np)) are expected to change also.

***Request 4:***

*According to the BWROG [Boiling Water Reactor Owners Group] letter, BWROG-03048 dated September 30, 2003, "Utility Commitment to NRC for OPRM Operability at Option III Plants," plant-specific DIVOM curve is recommended. Please identify any plant-specific differences from the generic values specified in NEDO-32465-A, such as the period based detection algorithm (PBDA) confirmation setpoints in Table 3-1, PBDA trip setpoints in Table 3-2, and generic DIVOM curve slope. Also, provide plant-specific values for OPRM scram setpoints and the DIVOM correlation for the next cycle.*

**Response 4:**

As noted in Response 1 above, the BWROG Stability Long-Term Solution Option III methodology for establishing the OPRM PBDA trip setpoints is described in the NRC

approved Reference 2. For plant and cycle-specific applications, the methodology described in Reference 2 remains unchanged, with the exception that a plant and cycle-specific DIVOM curve slope is used in place of the generic DIVOM curve slope. The acceptability of utilizing a plant and cycle-specific DIVOM curve is documented in Reference 3.

The methodology for developing the DIVOM curve is described in Section 4.4 of Reference 2. For plant and cycle-specific applications, the methodology for developing the DIVOM curve is described in Section 4.4 of Reference 2, except that plant and cycle-specific parameters (e.g., core power and flow, core loading, cycle energy, fuel types, etc.) are utilized in place of the generic fleet parameters. The values of other OPRM system parameters, such as PBDA period confirmation setpoints in Table 3-1 of Reference 2, remain within their original acceptable range. The current values of these setpoints have been established based on recent industry operational experience of the Option III OPRM system. The PBDA setpoints in Table 3-2 of Reference 2 remain unchanged.

The evaluation of the initial plant and cycle-specific DIVOM correlation and OPRM trip setpoints for CPS have not been completed at this time. Therefore, these values are not yet available. Once the evaluations are complete, AmerGen will provide the CPS initial DIVOM correlation and OPRM PBDA trip setpoints to the NRC. This is expected to be available in approximately mid-November.

***Request 5:***

*Please provide a detailed description of the procedure used to generate the OPRM's Period Based Algorithm Allowable Values and Confirmation Counts for future cycles. Please discuss the rationale used to relocate the allowable values to the core operating limits report (COLR).*

**Response 5:**

As described in Reference 2, the OPRM PBDA trip setpoints will be determined by applying the plant and cycle-specific DIVOM correlation to the process for initial applications described in Section 5 of Reference 2. In this process, the final minimum critical power ratio (FMCPR) is calculated from the initial minimum critical power ratio (IMCPR). The FMCPR is then compared to the safety limit MCPR (SLMCPR). If the FMCPR is greater than the SLMCPR, the OPRM PBDA trip setpoints are acceptable.

For future cycles, a reload review process consistent with that described in Section 6 of Reference 2 will be utilized. An evaluation of the applicability of the previous cycle DIVOM curve to the upcoming cycle will be performed. If required, a new DIVOM curve will be calculated. Once the appropriate DIVOM curve is established, the same process for determining the OPRM PBDA trip setpoints, as described above is applied.

The rationale for not including the core operating limits parameters in the TS is consistent with that applied to other core limits that are calculated or verified on a cycle-

specific basis, such as the average planar linear heat generation rate in TS 3.2.1, the minimum critical power ratio in TS 3.2.2, and the linear heat generation rate in TS 3.2.3. This is consistent with the guidance in Generic Letter 88-16, "Removal of Cycle-Specific Parameter Limits from Technical Specifications." It is also consistent with the TS and TS Bases approved by the NRC for the OPRM system in Reference 11.

***Request 6:***

*Surveillance Requirement (SR) 3.3.1.3.2 states that the setpoints for the trip function shall be as specified in the COLR. Please identify the specific setpoints and provide justification why "LCO 3.3.1.3 Four channels of the OPRM instrumentation shall be Operable" does not include the phrase "within the limits as specified in the COLR."*

**Response 6:**

The COLR will define the OPRM PBDA trip settings for each cycle. The PBDA trip settings defined in the COLR consist of the PBDA trip amplitude, (Sp) and the corresponding maximum confirmation count, (Np) trip setting. These settings will be determined based on the methodology described in Responses 1, 4, and 5 above. Reference 2 provides the relationship between amplitude and confirmation count trip settings.

AmerGen has reevaluated the proposed Limiting Condition for Operation (LCO) 3.3.1.3 wording, provided in Reference 1, in light of the NRC's question. Based on further assessment, AmerGen has determined that the proposed wording for TS LCO 3.3.1.3 is not consistent with the wording for other LCOs with setpoints defined in the COLR (i.e., TS Sections 3.2.1, 3.2.2, and 3.2.3). Therefore, the wording of TS LCO 3.3.1.3 will be revised to read as follows.

> "Four channels of the OPRM instrumentation shall be OPERABLE within the limits specified in the COLR."

Attachment 2 to this letter contains the revised TS 3.3.1.3 with this change incorporated.

***Request 7:***

*Please provide a detailed description of the alternate method to detect and suppress thermal-hydraulic instability oscillation stated in TS LCO 3.3.1.3, Actions A.3 and B.1. Please include the calculation methodology used to define the regions of exclusion, exit, and controlled entry on the power-to-flow map.*

**Response 7:**

The alternate method to detect and suppress thermal-hydraulic instability (THI) oscillations will be based on the present TS methodology. The alternate method will maintain the same guidance on how and when to monitor for THI, and will contain detailed power-to-flow operating maps that depict regions of high power and low flow to enable manual operator actions for preventing plant operation in areas where the

potential for THI is increased. These actions are based on the Interim Corrective Actions (ICAs) for instability prevention recommended by the BWROG and committed to in Reference 12. This alternate methodology will be entered in response to inoperability of one or more OPRM channels or inoperability of the OPRM trip system. This methodology will remain in use until the OPRM trip function can be returned to an operable status. These actions have been and will continue to be included as part of training for licensed operators.

The calculation methodology used to define the exclusion regions on the power-to-flow map will be based on the Backup Stability Protection (BSP) guidance provided by General Electric. The BSP calculation methodology uses plant and cycle specific information to calculate two exclusion regions (i.e., scram and controlled entry regions). Clinton Power Station conservatively treats the "controlled entry region" as an "immediate exit region." A detailed presentation and discussion of the BSP calculation methodology is provided in Reference 15.

***Request 8:***

*Please discuss the rationale for the different thermal power values stated in the applicability section of LCO 3.3.1.3 (i.e., 21.6 percent) and in SR 3.3.1.3.4 (i.e., 25 percent). Also, please provide the technical basis for the completion time of 120 days in LCO 3.3.1.3 B.2. The staff notes that related information is discussed in CENPD-400-P-A, Rev. 1, "Generic Topical Report for the ABB Option III Oscillation Power Range Monitor (OPRM)," dated May 1995.*

**Response 8:**

Reference 13 provided a generic TS for the OPRM instrumentation. This TS contained generic values for the TS applicability as well as the power and flow values that define the region in which the OPRMs are enabled. The LCO applicability defines the conditions under which the TS is required to be met.

The 25% rated thermal power (RTP) value in Reference 13 is a generic BWR-6 Safety Limit for thermal limits monitoring LCO and SR thresholds. Due to Extended Power Uprate, CPS has reduced the Reactor Core Safety Limit for Thermal Power, (T.S. 2.1.1.1) to 21.6% RTP (Reference 14). Thermal power limits for LCO 3.3.1.3 are therefore reduced to 21.6% RTP.

SR 3.3.1.3.5 verifies that the OPRM system is not bypassed with reactor power greater than or equal to 25% RTP and recirculation drive flow less than or equal to the value corresponding to 60% of rated core flow. As described in Attachment 1 to Reference 1, the 25% RTP value is the plant-specific value for the 30% RTP value, which is bracketed in the proposed TS provided in Reference 13. AmerGen requested changes to the CPS TS to implement a 20% power uprate and addressed the power uprate changes to both the reactor stability ICAs and OPRM Option III as documented in Reference 1. In order to preserve the same level of protection against occurrence of a THI, the LCO applicability and the instability exclusion boundaries were unchanged with respect to

absolute power level. As noted in Attachment 1 to Reference 1, the reactor core flow did not change with power uprate, so the flow portion of the enable region remains 60% of rated core flow. The 30% RTP value was reduced by the ratio of 2894 MWt/3473 MWt, which reduces the power portion of the enabled region to 25% RTP (Reference 14).

The 120 day completion time associated with LCO 3.3.1.3 B.2 is based on the Generic TS provided in Reference 13 which was approved by the NRC in Reference 11. Reference 13 states that since plant operation is minimized in areas where oscillations may occur, operation for 120 days without OPRM trip capability (i.e., in accordance with the Completion Time for Action B.2) is considered acceptable with implementation of the alternate method of detecting and suppressing thermal hydraulic instability oscillations. Since the NRC approval of Reference 13 and its associated Generic TS without any limitations or conditions associated with the 120 day completion time, there is no further technical basis for the completion time.

***Request 9:***

*Since the OPRM system was in test mode before the trip output will be activated, please describe the lessons learned during the testing period of the system. Please include any changes that were necessary in order to avoid any spurious scrams at Clinton Power Station, Unit 1, and whether the deviations from the NRC approved methodology, if any, were conservative.*

**Response 9:**

Following installation of the OPRM system in 1999, a monitoring period without the trip activated, was utilized to observe equipment response and make parameter adjustments if necessary. Since that time, factory provided hardware and software revisions were installed, analyses of downloaded raw OPRM data sets were performed and setpoints were revised. Data analysis revealed transient conditions that could lead to a temporary increase in confirmation counts and an OPRM system alarm but which are not indicative of a general decrease in core stability performance.

As a result, changes to OPRM system parameters, Tmin (Minimum Oscillation Period), ε (Period Tolerance), N1 (Pre-Trip Alarm), and Cell in Service Delay were implemented to reduce the occurrence of pre-trip alarms and associated trouble annunciations which may inappropriately distract operators during normal and unplanned plant evolutions when the observed conditions do not legitimately represent an approach to the onset of thermal hydraulic oscillations.

Additionally, data observations indicated whenever gain adjustments or any other manipulations of individual local power range monitors (LPRMs) occur, it is prudent that the associated OPRM channel (division) be placed in bypass or otherwise taken out of service to avoid the potential for an OPRM trip leading to a possible SCRAM condition.

There were no deviations from the NRC approved methodology used since all changes to OPRM system parameters fell within approved ranges.

Industry experience and GE have recommended further changes to OPRM system parameters. These recommendations will be utilized during the implementation for operating cycle 11.

***Request 10:***

*Page 9 of Attachment 1 states that there are no allowable values associated with the OPRM upscale trip function. Please discuss how the operability of the OPRM upscale function is determined in the absence of the allowable values. If some other value has been used by the procedure, then please discuss how this value meets the requirements of Title 10, Code of Federal Regulations (10 CFR), Section 50.36(c)(1)(ii)(A).*

**Response 10:**

The BWROG Stability Long-Term Solution Option III is implemented utilizing the OPRM system. The OPRM is a digitally-based system. The OPRM trip setpoints are entered into the OPRM system as digital, configurable parameters. Since the settings are digital, the OPRM system and its components are not subject to calibration error, setpoint drift or measurement uncertainty attributable to typically analog systems. All OPRM setpoints will be validated against the approved setpoints identified in the associated design and licensing documents. The PBDA confirmation counts are discretely determined and counted by the digital system. Because of these factors, the OPRM system utilizes analytically determined trip setpoints and allowable values are not required.

As presented in Reference 2, the OPRM PBDA trip setpoints are determined conservatively and ensure that the Safety Limit MCPR will not be exceeded in the event a reactor instability occurs, thus meeting the requirements of 10 CFR 50.36(c)(1)(ii)(A). All OPRM system setpoints will be validated against the approved setpoints identified in the associated design and licensing documents.

***Request 11:***

*In order to ensure that the proposed OPRM trip will perform its intended design function, the equipment should be qualified for all environmental conditions where it is installed, as required by General Design Criterion 4, Appendix A to 10 CFR Part 50. Please confirm that the OPRM equipment at Clinton has been qualified for electromagnetic interference (EMI) and radio frequency interference (RFI) based on either the worst case EMI/RFI levels at its installed location or using the generic levels identified in the Electric Power Research Institute's Report, TR-102323, "Guidelines for Electromagnetic Interference Testing in Power Plants," and Regulatory Guide 1.180, "Guidelines for Evaluating Electromagnetic and Radio Frequency Interference in Safety-Related Instrumentation and Control Systems," dated October 2003.*

**Response 11:**

The OPRM module and associated Digital Isolation Block have been designed and qualified in accordance with the testing prescribed in MIL-STD-461C and MIL-STD-462 for equipment installed in ground facilities as classification A3. The following tests were successfully performed:

- CE01 (Conducted Emissions, AC Power and Interconnecting Leads 30 Hz to 15 kHz),
- CE03 (Conducted Emissions, AC Power and Interconnecting Leads),
- CE07 (Conducted Emissions, Conductive Switching Spikes on AC Power Lines),
- RE02 (Radiated Emissions, 14 KHz to 1.0 GHz, Broadband and Narrow Band),
- CS01 (Conducted Susceptibility 30Hz to 50 KHz AC Power Leads),
- CS02 (Conducted Susceptibility 50 KHz to 400 MHz AC Power Leads),
- CS06 (Conducted Susceptibility Spike, Power Leads),
- RS02 (Radiated Susceptibility, Magnetic Induction Fields),
- RS03 (Radiated Susceptibility, 14 KHz to 1.0 GHz Electric Field),
- IEC 801-2 Class 4 (Electrostatic Discharge Testing),
- IEC 801-4 Level 4 (Fast Transient Testing),
- ANSI/IEEE C62.41-1991 (Lightning Test)

The RS03 test, (Radiated Susceptibility, 14 KHz to 1.0 GHz Electric Field) additionally demonstrated successful performance within a field strength of 10 V/M, meeting the EPRI TR-102323 generic maximum equipment susceptibility recommendation. This EMI/RFI qualification testing is the same for all ABB Option III OPRM systems developed for the BWR owners group.

CPS performed an evaluation of Plant Background Emissions in September 2000. This evaluation conducted EMI surveys in the CPS Power Block to determine the electromagnetic environment at specific frequencies. The frequencies evaluated were higher than the operating frequency of the OPRM modules. This evaluation concluded that the background readings taken at CPS were similar to background levels at the plants contained in EPRI TR-102323.

CPS controls the radio frequency interference (RFI) in sensitive plant areas. This is established by prohibiting the use of two-way radios, two-way pagers, or cellular telephones communications in areas where equipment sensitive to RFI is located. One of the areas where use of this equipment is prohibited is in the Main Control Room. Physical postings and procedural guidance is part of this control process. Additionally, awareness of the effects of signals generated by this equipment and the controls in place to control are part of the Nuclear General Employee Training.

***Request 12:***

*Page 8 of Attachment 1 states that the calibration of the Local Power Range Monitors (LPRMs) is included in SR 3.3.1.1.8 for the Average Power Range Monitors (APRMs).*

*Therefore, it is not listed in the SR for OPRM. However, listing the SR in OPRM assures that the inoperability of LPRMs will be taken into account for OPRM also, instead of relying on the technician to take appropriate corrective actions. The improved TSs were developed on this basis and should be followed. Please discuss how you intend to address this concern.*

**Response 12:**

AmerGen originally proposed deleting this SR from the OPRM TS to eliminate redundancy in the TS and prevent the potential for operator confusion. AmerGen has reevaluated the approach of deleting this TS SR in light of the NRC's question. Based on further assessment, we have determined that the generic SR requiring calibration of the LPRMs at a frequency of every 1000 MWD/T average core exposure should be added to the new proposed TS 3.3.1.3. Attachment 2 to this letter contains the revised TS 3.3.1.3 with this change incorporated.

**References:**

1. Letter from Keith R. Jury (AmerGen Energy Company, LLC) to U. S. Nuclear Regulatory Commission, "Request for Amendment to Appendix A, Technical Specifications for the Oscillation Power Range Monitor Instrumentation," dated April 1, 2005

2. NEDO-32465-A, "Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology for Reload Applications," dated August 1996

3. BWROG-03048, "Utility Commitment to NRC for OPRM Operability at Option III Plants," dated September 30, 2003

4. Letter from I. Rickard (ABB) to U. S. NRC, "Report of a Defect Pursuant to 10 CFR 21 Concerning ABB Oscillation Power Range Monitors for BWRs," dated June 29, 1999

5. Letter from J. M. Heffley (AmerGen Energy Company, LLC) to U. S. Nuclear Regulatory Commission, "Request for Amendment to Appendix A, Technical Specifications for the Oscillation Power Range Monitor Instrumentation," dated June 1, 2001

6. GE letter MFN 01-046 from Jason S. Post, "Stability Reload Licensing Calculations Using Generic DIVOM Curves," dated August 31, 2001

7. Letter from Terrence W. Simpkin (Exelon Generation Company, LLC) to U. S. Nuclear Regulatory Commission, "Long Term Solution Stability System Oscillation Power Range Monitor Revised Implementation Plan," dated September 6, 2001

8. Letter from K. S. Putnam (Boiling Water Reactor Owners' Group) to U. S. Nuclear Regulatory Commission, "Resolution of Reportable Condition for Stability Reload

Licensing Calculations Using Generic Regional Mode DIVOM Curve," dated September 30, 2003

9. Letter from Keith R. Jury (AmerGen Energy Company, LLC) to U. S. Nuclear Regulatory Commission, "Request for License Amendment for Core Flow Operating Range Expansion and Oscillation Power Range Monitor (OPRM) Instrumentation," dated May 1, 2003

10. Letter from Patrick R. Simpson (Exelon Generation Company, LLC) to U. S. Nuclear Regulatory Commission, "Withdrawal of Request for License Amendment for Core Flow Operating Range Expansion and Oscillation Power Range Monitor (OPRM) Instrumentation," dated January 20, 2005

11. Letter from U. S. NRC to R. A. Pinelli (Boiling Water Reactor Owners' Group), "Acceptance of Licensing Topical Report CENPD-400-P, 'Generic Topical Report for the ABB Option III Oscillation Power Range Monitor'," dated August 16, 1995

12. Letter from J. G. Cook (Illinois Power Company) to U. S. Nuclear Regulatory Commission, "Illinois Power's (IP's) Response to Generic Letter (GL) 94-02, 'Long-Term Solutions and Upgrade of Interim Operating Recommendations for Thermal-Hydraulic Instabilities in Boiling Water Reactors'," dated September 2, 1994

13. CENPD-400-P-A, Rev. 1, "Generic Topical Report for the ABB Option III Oscillation Power Range Monitor (OPRM)," dated May 1995

14. NEDC-32989, "Safety Analysis Report for Clinton Power Station Extended Power Uprate" dated June 2001

15. General Electric Letter OG 02-0119-260, "Backup Stability Protection (BSP) for Inoperable Option III Solution," dated July 17, 2002

16. General Electric Letter OG04-0184-260, "Technical Basis for PBDA Successive Confirmation Count Alarm Setpoint," dated July 6, 2004

**ATTACHMENT 2**

Revision to Proposed Technical Specifications Pages

REVISED TECHNICAL SPECIFICATIONS PAGES
3.3-14a
3.3-14b

3.3 INSTRUMENTATION

3.3.1.3 Oscillation Power Range Monitor (OPRM) Instrumentation

LCO 3.3.1.3 Four channels of the OPRM instrumentation shall be OPERABLE within the limits specified in the COLR.

APPLICABILITY: THERMAL POWER ≥ 21.6% RTP.

ACTIONS

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

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One or more required channels inoperable. | A.1 | Place channel in trip. | 30 days |
| | OR | | |
| | A.2 | Place associated RPS trip system in trip. | 30 days |
| | OR | | |
| | A.3 | Initiate alternate method to detect and suppress thermal hydraulic instability oscillations. | 30 days |
| B. OPRM trip capability not maintained. | B.1 | Initiate alternate method to detect and suppress thermal hydraulic instability oscillations | 12 hours |
| | AND | | |
| | B.2 | Restore OPRM trip capability. | 120 days |
| C. Required Action and associated Completion Time not met. | C.1 | Reduce THERMAL POWER < 21.6% RTP. | 4 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 OPRM maintains trip capability.
---

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.3.1.3.1 | Perform CHANNEL FUNCTIONAL TEST. | 184 days |
| SR 3.3.1.3.2 | Calibrate the local power range monitors. | 1000 MWD/T average core exposure |
| SR 3.3.1.3.3 | ----------NOTE----------<br>Neutron detectors are excluded.<br>----------<br>Perform CHANNEL CALIBRATION. The setpoints for the trip function shall be as specified in the COLR. | 24 months |
| SR 3.3.1.3.4 | Perform LOGIC SYSTEM FUNCTIONAL TEST. | 24 months |
| SR 3.3.1.3.5 | Verify OPRM is not bypassed when THERMAL POWER is ≥ 25% RTP and recirculation drive flow is ≤ the value corresponding to 60% of rated core flow. | 24 months |
| SR 3.3.1.3.6 | ----------NOTE----------<br>Neutron detectors are excluded.<br>----------<br>Verify the RPS RESPONSE TIME is within limits. | 24 months on a STAGGERED TEST BASIS |