

SEP 23 2005



LR-N05-0448  
LCR H04-01

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

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION  
REQUEST FOR CHANGE TO TECHNICAL SPECIFICATIONS  
ARTS/MELLLA IMPLEMENTATION  
HOPE CREEK GENERATING STATION  
FACILITY OPERATING LICENSE NPF-57  
DOCKET NO. 50-354**

- References:
1. NRC letter, "Hope Creek Generating Station - Request for Additional Information Regarding Request for Change to Technical Specifications, Implementation of ARTS/MELLLA Operating Domain (TAC No. MC3390)," dated August 18, 2005
  2. LR-N04-0062, "Request for License Amendment: ARTS/MELLLA Implementation," dated June 7, 2004
  3. LR-N05-0032, Supplement to Request for License Amendment: ARTS/MELLLA Implementation," dated February 18, 2005

This letter responds to the NRC's request for additional information (RAI) (Reference 1) regarding the license amendment request by PSEG Nuclear LLC (PSEG) in References 2 and 3 to revise the Technical Specifications (TS) for the Hope Creek Generating Station to reflect an expanded operating domain resulting from implementation of Average Power Range Monitor/Rod Block Monitor/Technical Specifications/Maximum Extended Load Line Limit Analysis (ARTS/MELLLA). The amendment request also includes changes in the methods used to evaluate annulus pressurization (AP) and jet loads resulting from the postulated recirculation suction line break (RSLB).

Attachment 1 to this letter provides the responses to three of the NRC staff's questions. PSEG expects to submit responses to the remaining questions no later than

AP01

***This letter forwards proprietary information in accordance with 10CFR 2.390. The balance of this letter may be considered non-proprietary upon removal of Attachment 1.***

SEP 23 2005

October 17, 2005 in accordance with the response schedule in Reference 1. Attachment 1 contains proprietary information as defined by 10 CFR 2.390. General Electric Company (GE), as the owner of the proprietary information, has executed the affidavit included in Attachment 1, which identifies that the attached proprietary information has been handled and classified as proprietary, is customarily held in confidence, and has been withheld from public disclosure. The proprietary information was provided to PSEG in a GE transmittal that is referenced by the affidavit. The proprietary information has been faithfully reproduced in the attached RAI responses such that the affidavit remains applicable. GE requests that the proprietary information be withheld from public disclosure in accordance with the provisions of 10 CFR 2.390 and 9.17. A non-proprietary version of the RAI responses also is provided in Attachment 2.

PSEG has determined that the information contained in this letter and attachments does not alter the conclusions reached in the 10CFR50.92 No Significant Hazards analysis previously submitted.

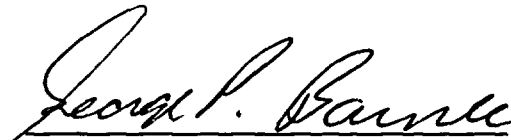
If you have any questions or require additional information, please contact Mr. Paul Duke at (856) 339-1466.

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

Executed on

9/23/05

(date)



George P. Barnes

Site Vice President - Hope Creek

Attachments (2)

C: Mr. S. Collins, Administrator – Region I  
U. S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406

Mr. S. Bailey, Project Manager - Hope Creek  
U. S. Nuclear Regulatory Commission  
Mail Stop 08B1  
Washington, DC 20555

USNRC Senior Resident Inspector – Hope Creek (X24)

Mr. K. Tosch, Manager IV (without Attachment 1)  
Bureau of Nuclear Engineering  
PO Box 415  
Trenton, New Jersey 08625

# General Electric Company

## AFFIDAVIT

**I, Bradley J. Erbes, state as follows:**

- (1) I am Manager, Systems Engineering, 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 Enclosure 2 to GE letter GE-HCGS-AM-091, Edward D. Schrull (GE) to Mr. Paul Duke (PSEG Nuclear LLC), *GE Responses to Support NRC RAIs 2 and 4*, dated September 9, 2005. The proprietary information in Enclosure 2, *GE Responses to Support NRC RAIs 2 and 4*, is identified by a double underline inside double square brackets. In each case, the superscript notation<sup>(3)</sup> refers to Paragraph (3) of the enclosed affidavit, which provides the basis for the proprietary determination.
- (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), and 2.390(a)(4) for "trade secrets" (Exemption 4). The material for which exemption from disclosure is here sought 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 aspects of past, present, or future General Electric customer-funded development plans and programs, resulting in potential products to General Electric;

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

The information sought to be withheld is considered to be proprietary for the reasons set forth in paragraphs (4)a., and (4)b, above.

- (5) To address 10 CFR 2.390 (b) (4), the information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by GE, and is in fact so held. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by GE, no public disclosure has been made, and it 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 in paragraph (2), above, is classified as proprietary because it contains detailed results of analytical models, methods and processes, 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 development of the evaluation process along with the interpretation and application of the analytical results is derived from the extensive experience database that constitutes a major GE asset.

- (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 safety and 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.

The research, development, engineering, analytical and NRC review costs comprise a substantial investment of time and money by GE.

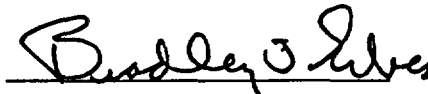
The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

GE's competitive advantage will be lost if its competitors are able to use the results of the GE experience to normalize or verify their own process or if they are able to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to GE would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources 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 these very valuable analytical tools.

I declare under penalty of perjury that the foregoing affidavit and the matters stated therein are true and correct to the best of my knowledge, information, and belief.

Executed on this the 9th day of September 2005.

A handwritten signature in black ink, appearing to read "Bradley J. Erbes", written over a horizontal line.

Bradley J. Erbes  
General Electric Company

**HOPE CREEK GENERATING STATION  
FACILITY OPERATING LICENSE NPF-57  
DOCKET NO. 50-354  
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION  
ARTS/MELLLA IMPLEMENTATION**

By letter dated June 7, 2004, and in a supplement dated February 18, 2005, PSEG Nuclear LLC (PSEG) requested a revision to the Technical Specifications (TS) for the Hope Creek Generating Station to reflect an expanded operating domain resulting from implementation of Average Power Range Monitor/Rod Block Monitor/Technical Specifications/Maximum Extended Load Line Limit Analysis (ARTS/MELLLA). PSEG also proposed to make changes in the methods used to evaluate annulus pressurization (AP) and jet loads resulting from the postulated Recirculation Suction Line Break (RSLB).

In a letter dated August 18, 2005, the NRC staff requested additional information concerning the proposed change. PSEG's responses to three of the NRC staff's questions are provided below.

2. In order to develop the plant-specific and cycle-specific DIVOM curve for Cycle 13, did you consider the state points for operation within the MELLLA domain of the power-flow map, and does the MELLLA operation make the slope of the DIVOM curve more conservative (steeper) compared to the existing ELLLA domain?

**PSEG Response:**

The plant- and cycle-specific DIVOM curve is evaluated at the limiting power/flow point on the power-flow map (i.e., the intersection of the MELLLA boundary and the natural circulation line (NCL)). This is a conservative state point since the plant will tend to end up at a power/flow state point below this limiting power/flow state point after a two recirculation pump trip and prior to the equilibration of the feedwater temperature.

The DIVOM slope at the intersection of the MELLLA boundary and the NCL will tend to be higher than the corresponding DIVOM slope at the intersection of the ELLLA boundary and the NCL due to a higher power/flow ratio. A higher DIVOM slope will result in a lower OPRM system amplitude setpoint, which will cause the Reactor Protection System to scram earlier in the event of a thermal-hydraulic instability oscillation.

4. In Table 4-1 of NEDC-33066P, Rev. 2, the OLMCPR values from the rod withdrawal error event were shown for various power/flow combination, except for 100% of current licensed thermal power and 76% rated core flow. This is a state point on the modified power/flow map for MELLLA; however, it falls outside the current operating domain. The NRC staff believes that this state point has the potential to be limiting

for the OLMCPR. Provide an evaluation of the OLMCPR at this point or a justification for why it is not considered limiting.

**PSEG Response:**

The 100% current licensed thermal power / 76% rated core flow case could be closer to operating limits than the analyzed case in a normal burn through the cycle, however, the lower flow condition would require a lower control rod density. The procedure by which this calculation is done is very conservative and bounds the state point in question. The following three basic assumptions form the analytical bases of the RWE transient at a BWR equipped with a standard RBM system, but applying the ARTS methodology for off-rated limits:

- a) [[  

]] The RBM  
 system is assumed to just meet technical specifications requirements for operability.
- b) The RWE transient occurs over sufficient time to allow void re-distribution and heat transfer to reach equilibrium [[  

]]
- c) [[  

]]

Because the core is xenon free, a large number of blades are required at the point of peak hot excess while the core is placed on limits. The number of blades required for the rated flow condition is much greater than if the plant were at 76% flow. The plant is then put on limits with the strongest rod fully inserted. The rod is then pulled full out in two-notch increments with no credit for a rod block and the worst observed  $\Delta\text{CPR}$  / Initial CPR is used in the calculation of the  $\Delta\text{CPR}$  for the withdrawal. [[

]]

**5. DELETED**

[During a telephone conference on August 9, 2005, the NRC staff agreed that Question 5, related to credit for the Rod Block Monitor, could be deleted because the issue is sufficiently covered in PSEG's application.]

**6. Describe your training program for the operators in preparation for implementing the ARTS/MELLLA operation at Hope Creek.**

**PSEG Response:**

ARTS/MELLLA implementation includes changes to the operating power/flow map contained in plant procedures and displayed in the control room on the Safety



Parameter Display System (SPDS) computer and the Plant Process Computer (PPC). Instrument setpoints for the Average Power Range Monitor (APRM) and Rod Block Monitor (RBM) will be changed to allow operation in the MELLLA region. A plant computer point will be created to indicate operational margin to the MELLLA boundary line. The computer point will alarm when operation is at or above the MELLLA boundary line. Plant procedures will be revised to include precautions and limitations for operation in the MELLLA region.

The training program for the operators will focus on changes to current bases and practices due to the implementation of ARTS/MELLLA. The training will specifically address changes to Technical Specifications, Operations procedures and control room displays as affected by the implementation of ARTS/MELLLA. In addition, the training will provide an overview of the effect or potential effect of the ARTS/MELLLA implementation on the:

- Licensed Power Flow Map
- APRM flow-biased setpoints
- Offrated power and flow dependent thermal limits
- RBM flow-biased setpoints
- Core Monitoring System
- Analysis of Anticipated Operational Occurrences and Accidents
- Core Operating Limits Report
- Cycle Management Report (target control rod patterns, steady state power / flow specifications)
- Reactivity Management Planning for startups and shutdowns, and normal operational power maneuvers.