

August 1, 2001  
NG-01-0925

Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Mail Station 0-P1-17  
Washington, DC 20555-0001

Subject: Duane Arnold Energy Center  
Docket No: 50-331  
Op. License No: DPR-49  
Response to Request for Additional Information (RAI) to Technical  
Specification Change Request TSCR-042 – Extended Power Uprate  
(TAC # MB0543)

Reference: NG-00-1900, “Technical Specification Change Request (TSCR-042):  
‘Extended Power Uprate’,” dated November 16, 2000.

File: A-117, SPF-189

Dear Sir(s):

On July 9, 2001, a conference call was held with the NRC Staff regarding the referenced amendment request to increase the authorized license power level of the Duane Arnold Energy Center (DAEC). In order to complete their review, the Staff requested additional information to that previously provided. This Request for Additional Information (RAI) had been previously transmitted to us electronically to facilitate the call. Attachment 1 to this letter contains the requested additional information, as modified in the conference call.

Please note that the response in Attachment 1 contains information that the General Electric Company (GE) considers to be proprietary in nature and subsequently, pursuant to 10 CFR 9.17(a)(4), 2.790(a)(4) and 2.790(d)(1), requests that such information be withheld from public disclosure. The portion of the text containing the proprietary information is identified with vertical sidebars in the right margin. An affidavit supporting this request is provided as Attachment 2 to this letter. Attachment 3 is the redacted version of Attachment 1, with the GE proprietary material removed, suitable for public disclosure.

No new commitments are being made in this letter.

Please contact this office should you require additional information regarding this matter.

This letter is true and accurate to the best of my knowledge and belief.

NUCLEAR MANAGEMENT COMPANY, LLC

By *Gary Van Middlesworth*  
Gary Van Middlesworth  
DAEC Site Vice-President

State of Iowa  
(County) of Linn

Signed and sworn to before me on this 2 day of August, 2001,

by Gary Van Middlesworth

*Kathryn Dunlap*  
Notary Public in and for the State of Iowa

July 24, 2002  
Commission Expires

- Attachments:
- 1) DAEC Response to NRC Mechanical and Civil Engineering Branch Request for Additional Information Regarding Proposed Amendment for Power Uprate
  - 2) General Electric Affidavit of Proprietary Information
  - 3) Redacted Version of DAEC Response to NRC Mechanical and Civil Engineering Branch Request for Additional Information Regarding Proposed Amendment for Power Uprate

cc: T. Browning  
R. Anderson (NMC) (w/o Attachments 1&2)  
B. Mozafari (NRC-NRR)  
J. Dyer (Region III)  
D. McGhee (State of Iowa) (w/o Attachments 1&2)  
NRC Resident Office  
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**Attachment 2 to**

**NG-01-0925**

**General Electric Affidavit of Proprietary Information**

# 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 Enclosure 1 to letter GEDA-AEP-562, *Response to NRC Mechanical RAIs*, (GE Company Proprietary), dated July 31, 2001. The proprietary information is delineated by bars marked in the margin adjacent to the specific material in the *Enclosure 1 to Letter GEDA-AEP-562 GE Responses to NRC Mechanical RAIs*.
- (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.

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

- (5) 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 further details regarding the GE proprietary report NEDC-32980P, *Safety Analysis Report for Duane Arnold Energy Center Extended Power Uprate, Class III (GE Proprietary Information)*, dated November 2000, which 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.

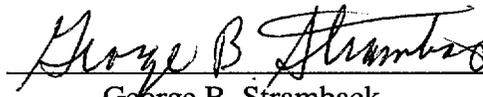
The value of this information to GE would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall, and deprive GE of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing these very valuable analytical tools.

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

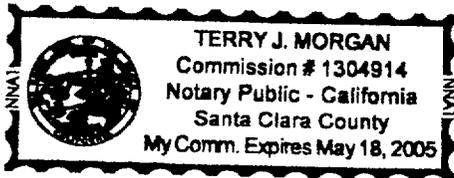
George B. Stramback, being duly sworn, deposes and says:

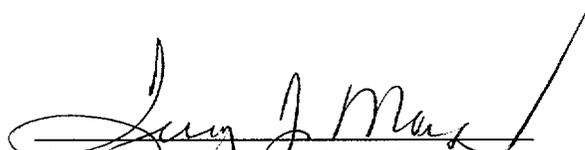
That he has read the foregoing affidavit and the matters stated therein are true and correct to the best of his knowledge, information, and belief.

Executed at San Jose, California, this 31<sup>st</sup> day of July 2001.

  
George B. Stramback  
General Electric Company

Subscribed and sworn before me this 31<sup>st</sup> day of July 2001.



  
Notary Public, State of California

**Redacted Version of**  
**DAEC Response to NRC**  
**Mechanical and Civil Engineering Branch**  
**Request for Additional Information**  
**Regarding Proposed Amendment for Power Uprate**

1. In Section 3.3.5, you indicated that during EPU, the components in the upper zone of the reactor, such as the steam separators and dryer, are mostly affected by the increased steam flow. The effects of the EPU on the flow induced vibration for the steam separators and dryers should be addressed further. Confirm whether and how the recorded vibration data can be applicable for the EPU. Discuss the potential for flow-induced vibration of the reactor internal components due to various mechanisms, including, in particular, the fluid-elastic instability for the proposed power uprate. Provide a calculation of the flow induced vibration stress level and the cumulative fatigue usage factors for the steam separators and dryers for the EPU condition.

DAEC Response:

The steam dryer has no safety function. The sole function of the steam dryer is to remove moisture from the steam in order to minimize erosion of the piping and turbine and to improve the turbine efficiency. BWRVIP-06, which was endorsed by the NRC, also states that the dryer is non-safety related and while the failure of a dryer component may cause an operability concern, it has no safety impact. Hence the dryer was not instrumented during startup testing and no measured vibration data is available for the prototype plant. In addition, it is not necessary to calculate flow-induced vibration stress levels and the cumulative fatigue usage factors for the steam dryer for the EPU condition.

The design criteria for the steam dryer is that the structural integrity of the dryer is maintained when subjected to a steam line break occurring beyond the main steam isolation valves. Since the dome pressure is not changed under EPU conditions, steam dryer structural integrity evaluations performed for a steam line break for the current rated thermal power is applicable to EPU conditions.

**[[General Electric Proprietary Information Redacted]]**

The operational history of dryers in similar plants was also studied to see if there were any flow-induced vibration-related problems in the dryer. Only drain channel cracks at steady state conditions and outer bank hood damage due to turbine stop valve (TSV) closure were found due to vibration effects. The outer bank hood (adjacent to the steam outlet nozzles) at Duane Arnold is four times thicker than at the plant where the damage occurred, while the TSV closure time is identical. Hence, it is expected that the outer bank hood can withstand the transient. While instances of drain channel cracking and hood cracking have occurred at operating plants, it is an operational issue only, relating to proper drying of the steam before it leaves the

dryer. No structural integrity problems have been observed with these cracks. The dryers are visually inspected during removal in each refueling outage, per BWRVIP-06, and any significant cracking can be repaired.

The steam separator is also not a safety-related component. Thus, it is not necessary to calculate flow-induced vibration stress levels and the cumulative fatigue usage factors for the steam separators for the EPU condition. However, the steam separator loads act on the shroud through the shroud head. Since the shroud is a safety-related component, the separator/shroud structure was tested at various power conditions up to the original rated power during Duane Arnold initial plant startup.

**[[General Electric Proprietary Information Redacted]]**

Hatch 1 and 2 are BWR/4 plants, the same class as Duane Arnold, and they have been operating at 113% of original rated power, without any separator or dryer problems.

**[[General Electric Proprietary Information Redacted]]**

2. Provide numerical values of the stresses to support the conclusion of Footnote 12 to Table 2 in Attachment 1 of the April 16th RAI Response letter (NG-01-0463).

DAEC Response:

Note 12 is revised as follows to add the numerical values for the bolt loads.

**[[General Electric Proprietary Information Redacted]]**