Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35609-2000

May 5, 2006

TVA-BFN-TS-431
TVA-BFN-TS-418

10 CFR 50.90

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop OWFN, P1-35
Washington, D. C. 20555-0001

Gentlemen:

In the Matter of	)	Docket Nos. 50-259
Tennessee Valley Authority	)	50-260
	)	50-296

BROWNS FERRY NUCLEAR PLANT (BFN) - UNITS 1, 2, AND 3 - TECHNICAL SPECIFICATIONS (TS) CHANGES TS-431 AND TS-418 - EXTENDED POWER UPRATE (EPU) - STEAM DRYER STRESS REPORT (TAC NOS. MC3812, MC3743, AND MC3744)

By letters dated June 28, 2004 (ADAMS Accession No. ML041840109) and June 25, 2004 (ML041840301), TVA submitted applications to the NRC for EPU of BFN Unit 1 and BFN Units 2 and 3, respectively. In support of the applications for EPU, TVA is providing certain engineering reports to demonstrate that the structural integrity of the BFN steam dryers will not be challenged under EPU conditions. These reports include steam dryer benchmarking, scale model testing, and stress analysis reports for BFN under EPU operating conditions. By letters dated March 9, 2006 (ML060720303) and April 13, 2006 (ML061070627), TVA provided the BFN steam dryer benchmarking report and the BFN scale model test report, respectively.

This letter transmits the BFN steam dryer stress analysis report. The stress analysis is based on an acoustic circuit model and load definition which are discussed in separate reports also being transmitted by this letter.

Enclosure 1 is the BFN load definition report, "Hydrodynamic Loads on Browns Ferry Nuclear Unit 1 Steam Dryer to 200 Hz,"

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prepared by Continuum Dynamics, Inc. (CDI). As discussed in Enclosure 1, the steam dryer dynamic load definition was derived from scale model testing of the Browns Ferry Unit 1 steam dryer and the application of an acoustic circuit methodology that was validated based on the Quad Cities Unit 2 instrumented steam dryer. Please note that the load definition report version in Enclosure 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), 2.390(a)(4) and 2.390(d)(1), requests that such information be withheld from public disclosure. Enclosure 2 contains the redacted version of the report, with the GE proprietary material removed, which is suitable for public disclosure. Enclosure 3 is an affidavit from GE supporting this request.

Enclosure 4 is the "Browns Ferry Nuclear Plant Units 1, 2, and 3 Steam Dryer Stress, Dynamic and Fatigue Analyses for EPU Conditions," prepared by GE. Included in the report are several modifications to the steam dryers, which are planned before operation at EPU. These modifications address previous BFN operating experience and the high stress locations identified in the analyses. The modifications will increase structural margin for EPU conditions. Please note that the report version in Enclosure 4 contains information that the General Electric Company (GE) considers to be proprietary in nature and subsequently, pursuant to 10 CFR 9.17(a)(4), 2.390(a)(4) and 2.390(d)(1), requests that such information be withheld from public disclosure. Enclosure 4 contains an affidavit from GE supporting this request. Enclosure 5 contains the redacted version of the report, with the GE proprietary material removed, which is suitable for public disclosure.

Enclosure 6 is CDI Report No. 05-28P, Revision 1, "Bounding Methodology to Predict Full Scale Steam Dryer Loads from In-Plant Measurements." This report describes the acoustic circuit methodology used in the development of the steam dryer loads. Please note that the report provided in Enclosure 6 contains information that CDI considers to be proprietary in nature and subsequently, pursuant to 10 CFR 9.17(a)(4), 2.390(a)(4) and 2.390(d)(1), requests that such information be withheld from public disclosure. Enclosure 6 is proprietary in its entirety. Enclosure 7 contains an affidavit from CDI supporting this request.

Using the detailed steam dryer pressure loads developed by CDI and documented in Enclosure 1, GE performed structural analyses, using a full, three-dimensional finite element

model. The analyses included time histories dynamic analyses, frequency calculations, and stress and fatigue evaluations. Steam dryer stresses at EPU conditions are generally below the fatigue acceptance criterion.

Because of the conservative nature of the bounding condition modeling, pressure loads, and stress concentration factors, higher stresses are indicated on certain steam dryer components. To reduce the identified stresses, TVA is planning to structurally modify the steam dryers before operating at EPU conditions (i.e., prior to restart of Unit 1 and during the next refueling outages of Units 2 and 3). In conjunction with planned steam dryer modifications, TVA will update the stress analysis in accordance with the design modifications. TVA will confirm the acceptability of the modifications in a stress analysis report that will be submitted to the NRC by June 23, 2006.

There are no commitments contained in this letter. If you have any questions regarding this letter, please contact me at (256)729-2636.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 5th day of May, 2006.

Sincerely,

William D. Crouch
Manager of Licensing
and Industry Affairs

Enclosures:
1: CDI Report No. 06-11P (proprietary version)
2: CDI Report No. 06-11 (non-proprietary version)
3: GE Affidavit for CDI Report No. 06-11P
4: GE-NE-0000-0053-7413-R0-P (proprietary version)
5: GE-NE-0000-0053-7413-R0-NP (non-proprietary version)
6: CDI Report No. 05-28P (proprietary information)
7: CDI Affidavit for CDI Report No. 05-28P

cc (w/o. Enclosures):

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Contains Proprietary Information per 10 CFR 2.390

ENCLOSURE 7
TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNITS 1, 2, AND 3

TECHNICAL SPECIFICATIONS (TS) CHANGES TS-431 AND TS-418 - EXTENDED POWER UPRATE (EPU) OPERATION - STEAM DRYER STRESS REPORT BOUNDING METHODOLOGY TO PREDICT FULL SCALE STEAM DRYER LOADS FROM IN-PLANT MEASUREMENTS

AFFIDAVIT

Attached is CDI's Affidavit for the **proprietary** CDI Report No. 05-28P, "Bounding Methodology to Predict Full Scale Steam Dryer Loads from In-Plant Measurements," Revision 1.

Continuum Dynamics, Inc.

(609) 538-0444 (609) 538-0464 fax 34 Lexington Avenue Ewing, NJ 08618-2302

AFFIDAVIT

Re: "Bounding Methodology to Predict Full Scale Steam Dryer Loads from In-Plant Measurements,: C.D.I. Report No. 05-28P, Revision 1 prepared by Continuum Dynamics, Inc., dated May 2006.

I, Alan J. Bilanin, being duly sworn, depose and state as follows:

1. I hold the position of President and Senior Associate of Continuum Dynamics, Inc. (hereinafter referred to as C.D.I.), and I am authorized to make the request for withholding from Public Record the Information contained in the documents described in Paragraph 2. This Affidavit is submitted to the Nuclear Regulatory Commission (NRC) pursuant to 10 CFR 2.390(a)(4) based on the fact that the attached information consists of trade secret(s) of C.D.I. and that the NRC will receive the information from C.D.I. under privilege and in confidence.

2. The Information sought to be withheld, as transmitted to TVA Browns Ferry as attachments to C.D.I. Letter No. 06104 dated 4 May 2006, C.D.I. Report No. 05-28P, Rev. 1, entitled "Bounding Methodology to Predict Full Scale Steam Dryer Loads from In-Plant Measurements," prepared by Continuum Dynamics, Inc., dated May 2006.

3. The Information summarizes:

   (a) a process or method, including supporting data and analysis, where prevention of its use by C.D.I.'s competitors without license from C.D.I. constitutes a competitive 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 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 3(a), 3(b) and 3(c) above.

4. The Information has been held in confidence by C.D.I., its owner. The Information has consistently been held in confidence by C.D.I. and no public disclosure has been made and it is not available to the public. All disclosures to third parties, which have been limited, have been made pursuant to the terms and conditions contained in C.D.I.'s Nondisclosure Secrecy Agreement which must be fully executed prior to disclosure.

5. The Information is a type customarily held in confidence by C.D.I. and there is a rational basis therefore. The Information is a type, which C.D.I. considers trade secret and is held in confidence by C.D.I. because it constitutes a source of competitive advantage in the competition and performance of such work in the industry. Public disclosure of the Information is likely to cause substantial harm to C.D.I.'s competitive position and foreclose or reduce the availability of profit-making opportunities.

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

Executed on this 4 day of May 2006.

Alan J. Bilanin
Continuum Dynamics, Inc.

Subscribed and sworn before me this day: 4 May 2006

Eileen P. Burmeister, Notary Public

EILEEN P. BURMEISTER
NOTARY PUBLIC OF NEW JERSEY
MY COMM. EXPIRES MAY 6, 2007

ENCLOSURE 3
TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNITS 1, 2, AND 3

TECHNICAL SPECIFICATIONS (TS) CHANGES TS-431 AND TS-418 - EXTENDED POWER UPRATE (EPU) OPERATION - STEAM DRYER STRESS REPORT HYDRODYNAMIC LOADS ON BROWNS FERRY NUCLEAR UNIT 1 STEAM DRYER TO 200 HZ

AFFIDAVIT

Attached is GE's Affidavit for the proprietary information contained in CDI Report No. 06-11P, "Hydrodynamic Loads on Browns Ferry Nuclear Unit 1 Steam Dryer to 200 Hz," Revision 1.

General Electric Company

AFFIDAVIT

I, Robert E. Gamble, state as follows:

(1) I am Manager, Mechanical Design and Analysis COE, 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 C.D.I. Report No. 06-11P, *Hydrodynamic Loads on Browns Ferry Nuclear Unit 1 Steam Dryer to 200 Hz, Revision 1*, May 2006 – Proprietary. The proprietary information is delineated by a double underline inside double square brackets. Figures and large equation objects are identified with double square brackets before and after the object. In each case, the superscript notation$^{\{3\}}$ refers to Paragraph (3) of this 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 details of steam dryer scale model test methods, processes and results including computer programs, which GE has developed and applied to perform evaluations of BWR Steam Dryers. Development of this information and its application for the design, procurement and analyses methodologies and processes for the Steam Dryer Program was achieved at a significant cost to GE, on the order of approximately two million dollars.

The development of the dryer performance 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 2nd day of May 2006.

Robert E. Gamble

Robert E. Gamble
General Electric Company