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MFN 03-016
March 11, 2003

U.S Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20852-2738

Attention: Chief, Information Management Branch
Program Management
Policy Development and Analysis Staff

Subject: **Response to Request for TRACG Inputs for MELLLA+ and DSS-CD
LTR Review (TAC Nos. MB6157 & 5705)**

By References 1 and 2, GE Nuclear Energy submitted Revisions 1 of the Maximum Extended Load Line Limit Analysis Plus (MELLLA+) Licensing Topical Report (LTR) and Revision 2 of the Detect and Suppress Solution - Confirmation Density (DSS-CD) LTR. Both the MELLLA+ and DSS-CD LTRs are supported by analytical evaluations based on a GE proprietary version of the Transient Reactor Analysis Code (TRACG).

During recent conversations regarding the review of the LTRs, the NRC requested the following information, which is provided in Enclosures 1 thru 3:

1. BWR/4 - Brunswick files
2. Fuel Files for TRACG ATWS Instability Analysis
3. COLPS Channel Grouping, Revision 1


The enclosed contains proprietary information defined by 10CFR2.790. GE customarily maintains this information in confidence and withholds it for public disclosure. GE proprietary information is identified by a double underline inside square brackets. The electronic version will include a red font inside the brackets. For black-grayscale printed copies, the red font and double underline will appear slightly lighter than the normal text.

The affidavit contained in Enclosure 4 identifies that the designated information has been handled and classified as proprietary to GE. GE hereby requests that the designated information be withheld from public disclosure in accordance with the provisions of 10 CFR 2.790 and 9.17.

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If you have any questions about the information provided here please contact, Tony Nakanishi at (408) 925-2051 or myself.

Sincerely,



FOR George Stramback
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Project No. 710

References:

1. MFN 02-050, Letter from George Stramback (GE) to the NRC, August 23, 2002, *Submittal of GE Proprietary Licensing Topical Report, NEDC-33006P, Revision 1, "General Electric Boiling Water Reactor Maximum Extended Load Line Limit Analysis Plus"*, August 2002.
2. MFN 02-087, Letter from George Stramback (GE) to the NRC, November 6, 2002, *Submittal of GE Proprietary Licensing Topical Report, NEDC-330075P, Revision 2, "General Electric Boiling Water Reactor Detect and Suppress Solution - Confirmation Density"*, November 2002.

Enclosures

1. Compact Disc: *BWR4 (Brunswick) TRACG Analysis Inputs for DSS-CD Application* (Proprietary)
2. Compact Disc: *Fuel Files Used for TRACG ATWS Instability Analysis* (Proprietary)
3. *COLPS Channel Grouping, Revision 1*, (Proprietary)
4. *COLPS Channel Grouping, Revision 1*, (Redacted)
5. Affidavit, George B. Stramback, dated March 7, 2003

cc: AB Wang (NRC)
MA Lalor (GE/San Jose)
JF Klapproth (GE/San Jose)
I Nir (GE/San Jose)

Enclosure 4

COLPS Channel Grouping, Revision 1

Redacted

1.0 COLPS Channel Grouping Calculations for ODYSY

ODYSY requires fit coefficients for various cross-section groupings called diffusion parameters.

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The core is subdivided into groups of channels called subgroups. The subgroups capture and segregate stability phenomena in the core. [

] The PANACEA CEDAR file provides the raw cross-section data used for fitting. The resulting fit coefficients are written to the output CEDAR file (FNODYS) under the qualifier defined in QUAL.

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1.1 Controlling the Channel Grouping Process

The core is subdivided into groups as described below. The result of the subdividing process is the *subgroup map*. The subgroup map assigns a group number to each channel in the core.

[] The COLPS input to control the channel grouping process is provided in Table 1.

There are two ways to make this assignment: manually and automatically.

IREGN = 0 *manual subgroup assignment*. This option gives the user complete control over the core subgroup specification. Use DTA input ICHAN(i,j) to define the subgroup map.

IREGN = 2 *automatic subgroup assignment*. This option automatically divides the core into logical groups. The user still has substantial control over the subgroup assignments. The subgroup map is built as prescribed through inputs: IGROUP, NCHT, NHOT, NNORF, NORIF, NPERI, and ICHDIV.

The following is a description of the automatic grouping process. The description includes a specification of the channel grouping related inputs.

Hydraulic Characteristic Divisions-

NNORF controls the group assignments based on channel hydrodynamic characteristics. Note, to reduce the naming confusion, "assemblies" is the name used for hydrodynamic similar channel

groupings. Assemblies usually include one or more PANACEA channel types. The assembly group map is saved for use in the hot channel option.

NHOT controls the addition of hot channels. If NHOT=1 or 3 (add hot channels based on assembly types), the assembly map defined based on NNORF is used to define the hot channel locations.

NORIF controls the group assignments based on the inlet orifice. The inlet orifice is a permanent feature of the reactor core. [

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NPERI controls the peripheral bundle grouping. A peripheral bundle lies on the boundary of the core and is next to a "no bundle" spot in the I or J direction. NNORF sometimes groups peripheral bundles because they have different hydraulic characteristics. NPERI gives direct control of peripheral bundle grouping.

Power Shape/Mode Divisions-

IGROUP/NCHT controls the subdivision of central (non-peripheral) regions. Generally, there will be some central groups already defined based on NNORF, NHOT, and NORIF. [

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If a core-wide stability evaluation is to be performed, the fundamental mode power grouping is specified (IGROUP = 0). [

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If a regional stability evaluation is to be performed, the harmonic mode power grouping is specified (IGROUP < 0). For this option, PANACEA harmonic data must be available on a CEDAR file on file code 49, with the qualifier defined through DTA input QUALH. [

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Convenience Divisions-

ICHDIV controls final reorganization of the group numbers. This option does not change the channel grouping. It reorders the numbers in ascending order based on assembly flow area or PANACEA bundle type number.

Table 1. - COLPS DTA Input

INPUT	TYPE	DIM	UNITS	Default VALUE	DESCRIPTION
IREGN	INT	-	-	[]	[]
IGROUP	INT			[]	[]
NCHT	INT			[]	[]
NHOT	INT	-	-	[]	[]
NNORF	INT	-	-	[]	[]
NORIF	INT	-	-	[]	[]
NPERI	INT	-	-	[]	[]
ICHDIV	INT	-	-	[]	[]
ICHAN	INT	(34,34)	-	[]	[]

2.0 Channel Grouping Modifications for TRACG

The channel grouping described above is modified for application to TRACG instability analysis. The modifications are made to account for additional TRACG capability in the areas of limiting channel response, peripheral channel grouping, and vessel modeling detail.

In order to capture the most limiting channels in the core, the COLPS generated channel grouping is further grouped manually. [

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Table 2. Limiting Bundle Selection Criteria

Core Wide Mode	Regional Mode	
	Side 1	Side 2
1. []	1. []	1. []
2 []	2 []	
3. []	3 []	
4. []	4. []	
5. []	5 []	
	6 []	

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Enclosure 4

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Core Wide Mode	Regional Mode	
	Side 1	Side 2
	7. []	

Enclosure 5

Proprietary Affidavit

General Electric Company

AFFIDAVIT

I, **David J. Robare**, state as follows:

- (1) I am Technical Projects Manager, Technical 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 Enclosures 1, 2, and 3 of GE letter MFN 03-16, George Stramback (GE) to NRC, *Response to Request for TRACG Inputs for MELLLA+ and DSS-CD LTR Review (TAC Nos. MB6157 & 5705)*, dated March 11, 2003. The proprietary information is the electronic files in the Enclosure 1 CD, *BWR4 (Brunswick) TRACG Analysis Inputs for DSS-CD Application (Proprietary)*, dated March 03, 2003, the electronic files in the Enclosure 2 CD, *Fuel Files Used for TRACG ATWS Instability Analysis (Proprietary)*, dated March 04, 2003, and the textual description in Enclosure 3, *COLPS Channel Grouping, Revision 1 (GE Proprietary Information)*.
- (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., 4b. and (4)e., 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 detailed information supporting the previous proprietary submittal of

NEDO-33006P, Revision 1, *General Electric Boiling Water Reactor Maximum Extended Load Line Limit Analysis Plus*, which describes results and conclusions from 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 proprietary information also contains detailed information supporting the previous proprietary submittal of NEDC-33075P, Revision 2, *General Electric Boiling Water Reactor Detect and Suppress Solution – Confirmation Density*, which describes results of analytical models, methods and processes, including computer codes, which GE has developed, and applied to perform stability evaluations, using the detection and suppression capability of the confirmation density algorithm for the BWR.

The development of the detection and suppression capability of the confirmation density algorithm for the BWR was achieved at a significant cost, in excess of ¼ million dollars, to GE.

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.

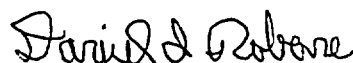
The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

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 11th day of March, 2003.



David J. Robare
General Electric Company