GE Nuclear Energy

R.E. Gamble
Manager, ESBWR

General Electric Company
175 Curtner Avenue, M/C 365 San Jose, CA 95125-1014
408 925-3352 (phone) 408 925-5665 (facsimile)

MFN 04-065

Project 717

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U.S. Nuclear Regulatory Commission
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Attention: Chief, Information Management Branch
Program Management
Policy Development and Analysis Staff

Subject: Response to Additional RAIs on ESBWR PCCS Modeling for TRACG Calculations

In a recent phone discussion, the NRC staff raised a concern regarding the TRACG modeling of the PCCS. The attached response to RAI A3 addresses that concern. A parametric case has been performed to evaluate the effect of simplified modeling of the PCC fluid volumes and flow areas on the long-term containment pressure. The results are shown in Enclosure 1.

Enclosure 1 contains GE proprietary information as defined by 10CFR2.390. A non-proprietary version is provided in Enclosure 2. GE customarily maintains this information in confidence and withholds it from public disclosure.

The affidavit contained in Enclosure 3 identifies that the information contained in Enclosure 1 has been handled and classified as proprietary to GE. GE hereby requests that the information of Enclosure 1 be withheld from public disclosure in accordance with the provisions of 10 CFR 2.390 and 9.17.

If you have any questions about the information provided here, please let me know.

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Sincerely,

Robert E. Gamble
Manager, ESBWR

Enclosures

1. MFN 04-065 – Response to Additional RAIs on ESBWR PCCS Modeling for TRACG Calculations - GE Proprietary Information
2. MFN 04-065 – Response to Additional RAIs on ESBWR PCCS Modeling for TRACG Calculations - Non Proprietary Information
3. Affidavit, Ronald E. Engel, dated June 18, 2004

cc: A. Cubbage USNRC (with enclosures)
J. Lyons USNRC (w/o enclosure)
G.B. Stramback - GE (with enclosures)
eDRF 0000-0029-3777

GE Proprietary Information

Enclosure 1

MFN 04-065

Response to Additional RAIs on ESBWR PCCS Modeling for TRACG Calculations

Enclosure 2

MFN 04-065

Response to Additional RAIs on ESBWR PCCS Modeling for TRACG Calculations

MFN 04-065
Enclosure 2

Responses to Additional RAIs on PCCS Modeling for TRACG Calculations

RAI-A3:
Provide parametric study case to support the simplified modeling of the PCCS used in the ESBWR TRACG Calculation.

Response:
A parametric case has been performed to evaluate the effect of simplified modeling of the PCC fluid volumes and flow areas on the long-term containment pressure. The result shows that the peak drywell pressure for the case using actual PCCS volumes and flow areas is [[ ]] than that of the case using simplified model.

The reference ESBWR design uses 4 PCCS with a total rated capacity of [[ ]]. The ESBWR PCC has [[ ]] rated capacity than the prototype unit used in the PANTHERS test. The increased capacity in the ESBWR unit is achieved by increasing the total number of PCC tubes by [[ ]] (i.e., from 496 to 672). The headers (steam and water) volumes are also increased accordingly.

The TRACG nodalization for the PCCS used in the ESBWR application cases is as follow. The heated perimeter and the heat transfer area for the PCC condenser tubes are scaled up [[ ]] from those of the prototype unit. However, there are no adjustments in the volumes and flow areas for the headers and the PCC tubes, i.e., same volumes and flow areas as those for the prototype unit. This simplification was based on engineering judgment that the effect of these increased volumes and flow areas on the long-term containment pressure is expected to be small.

A parametric case has been performed to evaluate the effect of these increased volumes and areas on the long-term containment pressure. The nominal Containment/LOCA Analysis (Section 3.7.2 of NEDC-33083P), i.e., baseline case for the Main Steam Line Break, was simulated with simplified modeling of the PCCS (the base case) and with corrected PCCS volumes and flow areas (the parametric case). Both cases were run using the 9-Apr-2004 Version of TRACG04. The effect on the long-term containment pressure is determined by comparing the results from these two cases.

Figures A3-1a and A3-1b show the comparison of long-term containment pressure responses. Figure A3-1a shows the results from the base case without adjustment of PCC cell volumes and flow areas, and Figure A3-1b shows the results from the parametric case with adjustment of PCC cell volumes and flow areas. These figures show good agreement for the transient responses between the base case and the parametric case. The peak drywell pressure levels off and remains well below the design pressure of 60 psia. The peak DW pressure for the parametric case with [[ ]] and flow areas is [[ ]] than that of the base case.

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Figure A3-1a. Containment Pressure Response for the Main Steam Line Break (Base Case)

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Figure A3-1b. Containment Pressure Response for the Main Steam Line Break (Parametric Case, With Corrected PCC Volumes and Flow Areas)

Enclosure 3

MFN 04-065

Affidavit

General Electric Company

AFFIDAVIT

I, Ronald E. Engel, state as follows:

(1) I am Technical Leader, 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 1 of GE letter MFN 04-065, Robert E. Gamble to NRC, *Response to Additional RAIs on ESBWR PCCS Modeling for TRACG Calculations,* dated June 18, 2004. The proprietary information is in Enclosure 1, *Response to Additional RAIs on ESBWR PCCS Modeling for TRACG Calculations.* For text and text contained in tables, GE proprietary information is identified 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 details for licensing application of TRACG to the ESBWR passive safety system design of the BWR. This TRACG code has been developed by GE for over fifteen years, at a total cost in excess of three million dollars. The reporting, evaluation and interpretations of the results, as they relate to the ESBWR, was achieved at a significant cost, 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 18th day of June 2004

RE Engel

Ronald E. Engel
General Electric Company