BWR OWNERS' GROUP

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BWROG-94050
April 11, 1994

Office of Nuclear Reactor Regulation
US Nuclear Regulatory Commission
Mail Station P1-137
Washington, DC 20555

Attention: Martin J. Virgilio, Director
Division of Systems Safety & Analysis

Subject: Stability Long-Term Solution Enhanced Option I-A Methodology Topical Report

Dear Mr. Virgilio:

Enclosed for NRC review and approval is Report NEDO-32339 entitled "Reactor Stability: Long-Term Solution Enhanced Option I-A", and a Supplement to the Report which is proprietary to GE. It is being submitted in accordance with the NRC schedule: "Milestones to Complete Long Term Solutions & ATWS/EPGs" as outlined with the Staff last year. This Report and its Supplement describe the features and supporting methodology of an enhanced version of the BWROG stability long-term solution Option I-A documented in NEDO-31960, "Long-Term Stability Solutions Licensing Methodology". As discussed in the enclosures, the enhancements address NRC concerns with Option I-A identified in the Safety Evaluation Report on NEDO-31960 and NEDO-31960, Supplement 1, which was transmitted by letter from Ashok C. Thadani, Director DSSA, to L. A. England, BWROG Chairman, on July 12, 1993. In addition to addressing the identified Staff concerns, the enhancements provide an overall improvement in reactor safety, solution robustness, and compatibility with plant operations.

Enhanced Option I-A utilizes the same basic stability region boundary definition process and acceptance criteria described in NEDO-31960. The new restrictions on core power distribution associated with this solution provide the opportunity for solution optimization with respect to instability protection, as well as avoidance of unnecessary scrams. Specifically, this solution assures automatic scram protection for anticipated operational occurrences (AOOs) susceptible to instability, without requiring reactor scram for those AOOs which remain stable. The control rod block feature included with this stability solution assures adequate stability margin when core power distribution controls are not in place.

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Significant defense-in-depth features have been incorporated to add robustness and provide protection against unanticipated events. A stability monitoring system has been added as a defense-in-depth feature to provide early indication of reductions in stability margin as a result of unanticipated events. The stability monitoring system in Enhanced Option I-A is based on the period-based algorithm (PBA) documented in NEDO-31960, and approved for application in the Option III solution. This system provides an effective stability detection capability that has significantly faster response characteristics than conventional stability monitors.

The BWROG is requesting NRC approval of the Enhanced Option I-A long-term stability solution and its supporting methodology. This includes NRC approval to use the GE proprietary code ODYSY for the application described. To facilitate approval, the LTR supplement provides documentation of this best-estimate frequency domain stability code.

The BWROG is also requesting approval for the scope and content of the associated Technical Specification changes. Conceptual specifications in the improved Technical Specification format are provided in Appendix D to the LTR for clarification only. A formal submittal of optimized Technical Specifications resulting from the Enhanced Option I-A stability solution will be made later in 1994 and may be considered for incorporation into NUREG-1433/1434. Actual plant revised Technical Specifications will be included with plant-specific documentation submitted for implementation of this solution.

Similarly, NRC approval is requested for the initial application and reload review process, which ensures that adequate safety limit protection is created and maintained. This process is designed to minimize the need for cycle-specific setpoint adjustment and NRC review. The procedures which implement the initial application and reload review process are provided in Appendices A and B to the LTR and do not require detailed review and approval.

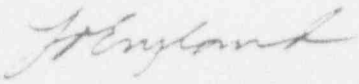
Finally, the demonstration plant analysis contained in Appendix E to the LTR is included for completeness, and does not require specific NRC approval.

This Report is being submitted on behalf of several utilities who are planning to incorporate this solution at their plants. The Enhanced Option I-A stability solution has been reviewed with your staff during meetings on September 17, 1993, and December 15, 1993, with positive feedback on all enhancements to the solution. Based on this feedback, the hardware and software design and development efforts associated with this solution are proceeding. To support

targeted implementation schedules. NRC review in accordance with the aforementioned NRC schedule is appreciated. To provide a mechanism for identification and resolution of Staff concerns and to facilitate approval of NEDO-32339, a meeting with your staff will be requested for May 17, 1994. Separate NRC review of the hardware and software designs will be requested when those activities have progressed sufficiently.

The conclusions contained in this letter and attached reports have been endorsed by a substantial number of BWR Owners' Group members; however, it should not be interpreted as a commitment of any individual member to a specific course of action. Each member must formally endorse the BWR Owners' Group position in order for that position to become the member's position.

Sincerely,



L. A. England, Chairman
BWR Owners' Group

OPT1ALTR/nrc1/jsp

Enclosure

cc: RC Jones, NRC
LE Phillips, NRC (2 copies)
JL Mauck, NRC
AC Thadani, NRC
RA Pinelli, BWROG Vice Chairman
CL Tully, Regulatory Response Group Chairperson
CM Mowry, BWROG Enhanced Option I-A Committee Chairman
TJ Rausch, BWROG Stability Committee Chairman
R. Baker, BWROG Technical Specification Committee Chairman
C. Lehmann, BWROG Stability D&S Committee Chairman
BWROG Enhanced Option I-A Committee Members
LS Gifford, GE
SJ Stark, GE

General Electric Company

AFFIDAVIT

I, Robert C. Mitchell, being duly sworn, depose and state as follows:

(1) I am Project Manager, Safety Evaluation Programs, 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 the GE proprietary report NEDC-32339P Supplement 1, *Reactor Stability Long-Term Solution: Enhanced Option I-A,* Class 3 (GE Proprietary Information), dated March 1994. This information is delineated by bars marked in the margin adjacent to the specific material.

(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 paragraphs 4.a, 4.b and 4.d, 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 results of analytical models, methods and processes, including computer codes, which GE has developed and applied to perform evaluations of BWR core and channel thermal-hydraulic stability conditions. A substantial effort has been expended by General Electric to develop this information in support of the BWR Owners' Group.

The development and approval of the BWR thermal-hydraulic stability methods used in this analysis was achieved at a significant cost, on the order of several 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 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.

The research, development, engineering, and analytical 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)
) ss:
COUNTY OF SANTA CLARA)

Robert C. Mitchell, 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 8TH day of APRIL 1997

Robert C. Mitchell
Robert C. Mitchell
General Electric Company

Subscribed and sworn before me this 8th day of April 1997

Mary L. Kendall
Notary Public, State of California