



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

April 18, 1994

Docket Nos. 52-004 and 99900403

Mr. Patrick W. Marriott, Manager
Advanced Plant Technologies
GE Nuclear Energy
175 Curtner Avenue
San Jose, California 95125

Dear Mr. Marriott:

SUBJECT: GE NUCLEAR ENERGY REPLY TO NOTICE OF NONCONFORMANCE
(NRC INSPECTION REPORT NO. 99900403/93-01)

Thank you for your letter of December 17, 1993, in response to our letter dated November 18, 1993. We have reviewed your reply and generally find it responsive to the issues raised in the Notice of Nonconformance with the exception of Nonconformance (93-01-03). We will review the implementation of your corrective actions during a future inspection to determine that full compliance has been achieved. Technical issues concerning the acceptability of the Gravity-Driven Cooling System (GDCCS) Integral Systems Test (GIST) program have been discussed with GE Nuclear Energy (GE) during previous meetings related to the SBWR test program and most recently documented in the U.S. Nuclear Regulatory Commission (NRC) letter to GE dated March 7, 1994.

The staff is still concerned with the issue raised in Unresolved Item (93-01-06). In NRC Inspection Report No. 99900403/93-01, dated November 18, 1993, the staff identified Unresolved Item (93-01-06), which states that the lack of independent design verification for TRACG calls into question the validity of accident analyses reported in Chapters 6 and 15 of the SBWR standard safety analysis report (SSAR). GE's reply letter of December 17, 1993, does not address this issue. The TRACG code has been submitted for approval by the NRC, through a code qualification document (CQD), as part of the SBWR design certification process. Until the staff has completed its review of the CQD, all calculations using TRACG that appear in the SSAR must be considered to be unvalidated and preliminary in nature. The staff expects that as part of the code qualification review, GE will provide adequate evidence of (1) code verification and validation, including comparison to relevant design certification test data, and (2) an independent design verification/design review process demonstrating that the code has been subject to appropriate quality assurance (QA) procedures.

The staff recognizes that the code development, verification, and validation processes may result in changes to the TRACG code, compared to the version used to provide the initial SSAR analyses. The staff also recognizes that changes in the SBWR design may also occur after the initial version of the SSAR has been submitted, and that these changes could affect the accident analysis results. The staff, therefore, expects that once the code has been approved for SBWR applications, the SSAR accident analyses will be redone with

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Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

Original Signed By:

R. W. Borchardt, Director
 Standardization Project Directorate
 Associate Directorate for Advanced Reactors
 and License Renewal
 Office of Nuclear Reactor Regulation

cc: See next page

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April 18, 1994

the qualified version of the code applied to the final SBWR design, thereby providing a set of properly validated and quality-assured calculations. The staff will, therefore, withhold final review of the SSAR Chapters 6 and 15 analyses until the final set of calculations is made available.

As a result of our review of your reply to Nonconformance (93-01-03), we find that additional information and clarification is needed. Your reply to Nonconformance (93-01-03) states that the changes made to TRACG are not governed by code change procedures because GE has declared the changed code a "new" code. GE states that the CQD fully documents the "new" code. The TRACG CQD does not include any testing of the code changes made as part of the GIST program and GE seems to have kept no official documentation on the code changes. It is the NRC staff position that when changes involving several hundred lines of source code are made to an existing computer code that contains approximately 200,000 lines of code, a "new" code has not been created. There are very specific code tests that must be performed to demonstrate that the changes are implemented correctly and that the models are adequate to describe the range of conditions they are meant to model. These relatively small code changes and tests can and should be independently verified as required by Appendix B to 10 CFR Part 50 and ANSI/ASME NQA-1. The code test cases presented at the GE design review and in the CQD are not adequate to test the changes that were made. If GE continues to designate new revisions as "new" codes, then GE should perform all of the tests that would be required of a new code that was written from first principles. This includes developmental testing of all correlations, independent testing of all correlations, and integrated system response testing. Fully documenting and testing a new code of this size and complexity requires much more extensive testing than is documented in GE's code qualification document.

During the GIST inspection exit meeting in August 1993, and at the meeting with GE in November 1993, GE verbally stated that all code qualification test case input decks would be fully independently verified. In GE's December 17, 1993, reply to the GIST inspection report you state that only the GIST input decks would be independently verified. It is the staff's position that all input decks should be independently verified as required by GE's procedures covering a design analysis. Please provide the additional information within 25 days of the date of this letter.

In accordance with 10 CFR Part 2.790 of the NRC's "Rules of Practice," a copy of this letter will be placed in the NRC's Public Document Room.

Mr. Patrick W. Marriott
GE Nuclear Energy

Docket No. 52-004

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