TERA

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

May 21, 1981

Dr. Glenn Sherwood, Manager
Safety Licensing
General Electric Company
175 Curtner Avenue
San Jose, California 95125

Dear Dr. Sherwood:

The enclosed question list relates to the methodology proposed by the General Electric Company to determine the safety/relief valve (SRV) loads for Mark III containments, which is a sub-task of Unresolved Safety Issue A-39, "SRV Pool Dynamic Loads." These questions are based on our review of the methodology described in Appendix 3B to GESSAR II, 238 Nuclear Island (22A7000). The requested information includes a justification for the SRV load reduction factor, and additional data related to the Caorso test program.

A telecopy of the question list was transmitted to Mr. Larry Steinert of your staff on May 14, 1981. In view of the current schedule for completing USI A-39, your prompt response to these questions is requested. Should you have any questions concerning this request for additional information, please contact Mr. T. Su on 301-492-9422.

Sincerely,

Karl Kniel

Karl Kniel, Chief
Generic Issues Branch
Division of Safety Technology

Enclosure:
Question List

8106010429

A

Enclosure

REQUEST FOR ADDITIONAL INFORMATION
APPENDIX 3B, GESSAR II, 238NI (22A7000)

1. The strategy outlined in GESSAR II (Section 3BA.12.5) for the calculation of the maximum positive pressure (MPP) design value does not provide sufficient justification or documentation in support of the multiplication factor (FACT) for load amplitude (see Equation 3BA-14). The methodology is shown in Figure 3BA-58 to overpredict the first actuation and subsequent action MPP values and thus it is asserted that a multiplication factor is warranted. However, this is probably a consequence of the additional conservatism associated with large air volumes as discussed in GESSAR II and not necessarily a constant conservative factor for all plant conditions.

   To illustrate this factor, consider the shape of the air volume term of the prediction equation as given in Figure 3BA-65 of GESSAR II. The Caorso air volume/quencher area value (VAAQ), as given in Appendix C of Reference 1, is sufficiently large to place it in the plateau region where a constant value is used for the VAAQ term of the prediction equation. The constant value is used to conservatively bound the VAAQ contribution to the maximum positive pressure in a region where it is known to decrease asymptotically toward zero. Since the VAAQ term contributes approximately 37% to the magnitude of MPP at Caorso plant conditions, we believe that this conservatism is primarily responsible for the high Caorso prediction values.

   However, the standard Mark III 230 plant VAAQ value places it in the ramp portion of the curve where the highest values of positive pressure were observed. As a consequence, no conservatism of the type discussed above is anticipated and therefore the use of a multiplication factor appears not to be justified. In order to continue our review of the quencher methodology, the following items are requested:

   A. Provide any additional justification for the use of the multiplication factor for Mark III plants.

---

1. "Caorso SRV Discharge Tests Phase I Test Report," NEDE-25100-P, May 1979.

B. Identify which Caorso data points were used in Figure 3BA-58 (i.e., test and transducer numbers) and tabulate the various parameters used to generate the prediction values.

C. Describe the rationale behind multiplying the confidence coefficient and standard deviation by the multiplication factor in Equation 3BA-14.

2. The correlation of the positive and negative pressure peaks as presented in Section 3BA.12.4.1 of GESSAR II is a vital part of the quencher design calculation methodology. Therefore, since the Caorso test data are being used to establish design load amplitudes, the staff requests that the following additional information be provided.

A. It is stated in Section 3BA.12.4.2 that the Caorso tests also confirmed the comparison which utilized the small-scale and large-scale test data as illustrated in Figure 3BA-53, i.e., a comparison of minimum absolute pressures predicted by Equations 3BA-12 and the actual measured values. Provide a similar figure using the Caorso data along with a tabulation of the measured values. Include, as part of the tabulation, the test number and transducer number of the various pressure measures used in the comparison.

B. Section 3.BA.12.5.14 presents the equation for the maximum negative pressure design value (MNPDV). This equation is based on the correlation of the positive and negative pressure peaks as discussed above. However, an additional term (FACT), which is based on the Caorso data, has been added in the denominator of the equation. Provide the justification and rationale behind the addition of this term which reduces the magnitude of the design value.