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STANDARD LETTER TO APPLICANTS CONCERNING PRIMARY SYSTEM PRESSURE RELIEF VALVE LOADS FOR PLANTS WITH MARK III TYPE CONTAINMENTS

Enclosed is a draft of a generic letter requesting applicants of plants with Mark III type containments to describe their design provisions to accommodate loads in the suppression pool resulting from operation of the primary system pressure relief valves. These loads are due to two distinct phenomena. First, pressure waves are generated within the suppression pool when, on first opening, relief valves discharge high pressure air followed by steam into the pool water. These are referred to as the steam vent clearing loads. Second, steam quenching vibrations can accompany extended relief valve discharge into the pool if the pool water is at an elevated temperature.

We have maintained periodic contact with GE on a generic basis regarding their progress in resolving these problems. Specific reviews of plants with Mark I type containments are being coordinated by Operating Reactor (OR) using a standard letter transmittal to each licensee. Reviews of plants with Mark III type containments have generally proceeded on a case-by-case basis although heavy reliance was placed on a generic resolution through GE. In our recent reviews of Mark III plants, however, we have noted that at least several plants (Grand Gulf and Skagit) are proceeding on the basis of relief valve discharge line designs and load analyses done by their architect/engineer. This precludes a strictly generic review in this area and we therefore recommend that a standard letter, of the type enclosed, should be sent to the applicants for plants with Mark III type containments listed below.

For Mark III plants currently under review which have not issued Q-2's (Barton and Skagit) the requests for information will be included in the next round of questions for the plant. As discussed with the LPM (E. Butcher), the Grand Gulf plant is being handled separately on an expedited basis due to its advanced design status.

AFFECTED MARK III PLANTS

Perry, Units 1 & 2
GESSAR
River Bend, Units 1 & 2
Douglas Point, Units 1 & 2
Clinton, Units 1 & 2
Montague, Units 1 & 2

D-13

The review of relief valve loads for each plant covered by the standard letter should be initiated by a TAR from DRL to DTR and should include CSB, SEB, and MEB. The CSB contact for this effort will be Dr. L. Slegers.

Robert L. Tedesco, Assistant Director
for Containment Safety
Division of Technical Review

Enclosure:
As stated

cc: E. Case
F. Schroeder
A. Giambusso
S. Hanauer
R. Boyd
R. Maccary
G. Lainas
J. Glynn
J. Kudrick
J. Shapaker
L. Slegers
R. Cudlin
C. Grimes
C. Anderson
K. Goller
RL B/C's

SAMPLE LETTER TO APPLICANT WITH MARK III CONTAINMENT

Gentlemen:

An ongoing review area for BWR plants with pressure suppression-type containments has been the capability of the suppression pool retaining structures to tolerate loads due to operation of the primary system pressure relief valves. Recent experience at several operating BWR plants has indicated that loads due to relief valve actuation may not have been fully considered in the structural design of the suppression chamber. In addition, the General Electric Company is now preparing to start a series of small-scale relief valve tests which will be used to verify analytical predictions of these loads.

Pool dynamic loads due to relief valve operation are due to two distinct phenomena. First, pressure waves are generated within the suppression pool when, on first opening, relief valves discharge high pressure air followed by steam into the pool water. These are referred to as steam vent clearing loads. Second, steam quenching vibrations can accompany extended relief valve discharge into the pool if the pool water is at an elevated temperature. Enclosed are specific requests for information pertaining to these effects which we will require to evaluate your design with regard to these phenomena.

We believe that these developments warrant further consideration of your particular design of the Mark III containment at this time. Therefore, we are requesting that you provide us with the status of your design and planned course of action to ensure that your design will reflect the latest available information. To the extent that these items have not already been covered in your present PSAR, we request that sufficient information be provided prior to issuance of the OL to resolve this issue. The attached list of questions provides the basis for your response.

You should provide us within 30 days after receipt of this letter a schedule for submittal of the requested information. Please contact us if you desire additional discussion or clarification of the material requested.

Enclosure:
Request for Additional Information

1. [illegible] of discharge line [illegible]. Provide all design operating conditions under which these valves would be actuated, [illegible]. Describe, with the [illegible] drawings, the routing of the discharge line to, and submergence in, the suppression pool and the design of the discharge line exit.

2. Provide the load specification for the suppression chamber structure due to consecutive actuation of one or more safety relief valves.

3. Provide the design load capability for the suppression chamber structure.

4. Provide justification for the load specifications given in (2) above by the use of appropriate experimental data and analysis. If the General Electric (GE) Company is responsible for specifying these loads, a statement to that effect is sufficient.

5. Identify, with the aid of drawings, any components or structures in the suppression pool region, other than the bounding walls of the suppression chamber, and the location of such components relative to the relief valve discharge line exits. Discuss the structural capability of these components to accommodate loads due to relief valve actuation.

6. Estimate the maximum number of single and multiple relief valve actuations over the life of your plant.

7. [illegible]

[illegible]

[illegible]

8. Specify the operator actions that are required when pool temperature limits are exceeded.

9. Present the temperature [illegible] from the specified limits in (1) for the following transients:

(a) main steam line isolation;

(b) [illegible], and,

(c) stuck open relief valve.

For purposes of this analysis, the minimum water [illegible] assumed in the suppression pool.

10. The temperature instrumentation that will be installed in the pool and the sampling or averaging technique that will be applied to arrive at a definitive pool temperature.