



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

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JUN 23 1977

MEMORANDUM FOR: R. E. Heineman, Director, Division of Systems Safety
FROM: R. L. Tedesco, Assistant Director for Plant Systems, DSS
SUBJECT: ESTABLISHING A CATEGORY "A" TECHNICAL ACTIVITY SEPARATE
FROM THREE OTHER AUTHORIZED CATEGORY "A" ACTIVITIES

I request that consideration be given by the Technical Activities Steering Committee to establish a separate Category "A" activity for "Determination of Safety Relief Valve Pool Dynamic Loads and Temperature Limit for BWR Containments." This matter is already included in three other Category "A" activities. A Technical Safety Activity Summary Sheet and Recommendation and Justification Sheet is enclosed for the proposed activity. This activity is involved in three authorized Category "A" activities (A-7, A-8 and A-9) and should be separated from these activities and made a separate task with an associated Task Manager because the matter is generic to all of these activities. This Task Manager would work closely with the other Managers to assure input and results are consistent for all three activities mentioned above.

In summary, the generic concern lies in the operation of safety/relief valves (SRV) and subsequent hydrodynamic loads on pressure suppression type containment structures. Also, vibratory loads on associated structures can be produced if the SRV operates at certain elevated suppression pool temperatures. The hydrodynamic loads and the suppression pool temperature limit are strongly influenced by the type of SRV and associated discharge devices.

At present, the same SRV and ramshead discharge device are used for both the Mark I and Mark II containments. Because of the similarities, the Mark I and Mark II will use the same analytical model and experimental results to determine the SRV related loads. In addition, the load mitigation device, which is included in the Mark I long term program, is expected to use the basic design principles of the Mark II quencher. Furthermore, the same pool temperature limits to be established for normal plant transients and ATWS will also be applied to the Mark I and Mark II containments. The Mark III type containment will also use a quencher device for load mitigation. Thus, the concern is generic for all GE pressure suppression type of containment systems.

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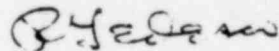
R. E. Heineman

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I recommend this action be taken to provide a systematic and managed resolution to the stated problem. I also recommend that John A. Kudrick be assigned as the Task Manager for the proposed activity.

Prompt attention of this matter will assist in preparing a schedule for the preparation of the Task Action Plans of the three authorized Category "A" activities.



Robert L. Tedesco, Assistant Director
for Plant Systems
Division of Systems Safety

Enclosure:
As Stated

cc: F. Schroeder
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Summary Sheet
Technical Safety Activity

Title: Determination of Safety/Relief Valve Pool Dynamic Loads and Temperature Limit for BWR Containmentment

TAC No.: 2285 and 3619

Div/Branch: DSS/CSB

Ref:

Problem Definition:

Experience at operating plants has indicated that initiation of safety/relief valve (SRV) results in substantial hydrodynamic loads on the containment structures, SRV line and supports. These loads result from:

1. Initial clearing of water leg in the safety/relief valve line, and
2. Instability of steam quenching with elevated pool temperature.

Category: A

T/A Fin #:

Plans for Resolution:

To be determined with preparation of task action plan.

Current Status:

CSB has lead responsibility for review and approval of SRV related hydrodynamic loads for all BWR containments. CSB is reviewing GE analytical model for ramshead device, and is also following the testing performed by GE to verify the model. For quencher devices, CSB is reviewing the testing to be performed by GE to determine SRV loads for Mark II containments.

Current Status: (Continued)

CSB is also evaluating the pool temperature limits, which were proposed by GE, for normal plant transient and ATWS to avoid vibratory loads induced by instability of steam quenching.

Priority: Category A

These loads were identified over the past one and one-half years as being significant. They were not considered in the design of Mark I and Mark II types of containments. An extensive analytical and test program is now in progress to quantify these loads and determine if modifications will be needed. Establishment of the suppression pool temperature limits for normal plant transient and ATWS is also actively in progress.

Assignment: DSS/CSB

Manhours: 3300

This concern is applicable to BWRs being reviewed for CPs, OLs, and also operating Mark I BWRs. The technical expertise to monitor the GE test programs and analytical effort is available in DSS/CSB and SEB.