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

March 24, 1981

Generic Task A-39

Docket Nos.: ~~50-358~~, 50-352/353, 50-367, 50-373/374, 50-387/388, 50-410, 50-322, 50-397

APPLICANT: Members of Mark II Owners Group

SUBJECT: MEETING WITH MARK II OWNERS GROUP TO DISCUSS SUPPRESSION POOL TEMPERATURE LIMIT AND T-QUENCHER LOAD SPECIFICATION, MARCH 13, 1981

Background

The purpose of this meeting was to discuss the technical details related to the suppression pool temperature limit and the T-quencher load specification. The staff and its consultants have had discussions with the Mark II Owners' Group on these subjects. During these discussions, we had raised several areas of concern related to: (1) the potential increase of the suppression pool temperature limit for low mass flux through the safety/relief valve; and (2) the deficiencies of the methodology used to predict pressure and frequencies for the Mark II T-quencher discharge. The Mark II Owners Group and their consultants, General Electric and Kraftwerk Union (KWU), were to present their responses to these concerns.

An attendance list and a copy of the meeting handouts (proprietary information with limited distribution) are enclosed.

Summary

1. Pool Temperature Limit

The Mark II Owners Group recently proposed revised suppression pool temperature limits for safety/relief valve operation. These limits are included in the report enetitled, "Mark II Containment Quencher Condensation Performance," dated March 11, 1981. Mr. G. Gottfried, representative of the Mark II Owners' Group, opened the meeting by discussing the adequacy of these limits.

The data base used to establish the pool temperature limit is the SRV tests conducted by KWU in Germany. Based on this data base, GE believes that the quencher devices have demonstrated stable condensation of steam for mass flux from 5 to 94 lbm/ft^2-sec at local subcooling as low as 10°F. However, the staff and its consultants disagreed with GE's interpretation of the data base. With the staff's interpretation of quencher submergence, the tests show local subcooling of 30°F instead of 10°F as GE suggested.

On the basis of the corrected submergence, the Mark II Owners' Group proposed the following alternative pool temperature limits:

a. For mass flux greater than 94 lbm/ft^2-sec, the degree of local subcooling should not be less than 30°F, which is equivalent to local temperature of 200°F with quencher submergence of 14 ft.

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b. For mass flux below 42 lbm/ft^2-sec the degree of local subcooling should not be less than 20°F.

c. For mass flux between 94 and 42 lbm/ft^2-sec, the degree of local subcooling should be linearly interporlated from 30°F to 20°F.

The staff and its consultants stated these proposed pool temperature limits were acceptable.

2. Assumptions for Pool Temperature Analysis

During the meeting held in December 1980 in Bethesda, Maryland, Dr. C. Graves of RSB requested additional information related to the methodology used to calculate the mass and energy released through the SRV, feedwater pump coastdown time, and availability of RHR operating in the suppression pool cooling mode. In response to this request, the Mark II Owners' Group will direct GE to prepare a letter report for the methodology to calculate the mass and energy blowdown. With respect to concerns on feedwater pump coastdown and RHR availability, the Mark II Owners Group intended to address these concerns on a plant-unique basis. We indicated that further discussion is required to justify the need for plant-unique assumptions. We strongly urged the applicants to minimize the plant-unique areas in order to expedite licensing review.

A working meeting was held on March 17, 1981 in Bethesda, Maryland to identify and justify the plant-unique assumptions. Both GIB and CSB staffs met with representatives of the Mark II Owners' Group and GE. As a result, we believe that the plant-unique areas appeared reasonable and will be reviewed on a plant-by-plant basis.

3. T-Quencher Load Specification

In August 1980, the Mark II Owners Group proposed a new methodology to predict SRV load magnitude and frequency range. As a result of our evaluation, we had requested additional information to justify the methodology. Dr. Gobel of KWU presented the additional data base and a discussion of physical phenomena on the air clearing phase during SRV discharge. He indicated that the wall pressure loads will increase with an increase of reactor pressure up to a certain value of reactor pressure. Further increase of the reactor pressure will not result in increased wall pressure; the slope of the pressure curve will decrease instead. This phenomenon is believed to result from more steam condensation in the SRV line at higher reactor pressure. Therefore, Dr. Gobel stated that the pressure multiplier (pressure slope) as proposed is conservative.

We indicated, however, that the regression analysis performed by our consultants suggested pressure multipliers ranging from 1.12 to 1.17 instead of 1.0 to 1.07 as proposed by the Mark II Owners' Group. Dr. Gobel pointed out that the inherent conservatism of the data base in

using a single cell test facility and extraporlating the test data to the design reactor pressure of 1280 psi, which is substantially higher than the SRV setpoint, should be sufficient to cover the deficiency of the proposed pressure multiplier. We indicated that we will take this into consideration for establishing the acceptance criteria for Mark II plants.

With respect to the frequency multiplier, we believe that additional adjustment is required to expand the frequency range for the case assuming actuation of all SRVs. Since the air volume in the SRV line influences the bubble oscillating frequency, the all valve case should have a wider frequency range since various lengths of SRV lines are considered. Mr. J. Metcalf of Stone and Webster Corporation indicated that the inherent conservatism of the design models for structure, piping and equipment will bound any deficiency caused by the current proposed relatively narrow frequency band. We concluded that the applicants will be required to provide an "amplified response spectra" (ARS) to demonstrate the difference between the design forcing function and the one with the expanded frequency range considering all SRV line lengths. With this information, the staff (MEB and/or SEB) will be able to assess the adequacy of the design forcing function.

T. M. Su, A-39 Task Manager
Generic Issues Branch
Division of Safety Technology

Enclosures:
1. List of Attendees
2. Meeting Handout
(Limited Distribution-
Proprietary)

cc: w/enclosure 1
A-39 Internal Distribution

Enclosure 1

List of Attendees

Name	Organization
9:00 - 12:00 am	
T. M. Su	NRC,DST,GIB
A. A. Sonin	MIT (for BNL)
C. Economos	BNL (For NRC)
H. Chau	Long Island Lighting Co.
W. M. Davis	GE
T. M. Lee	NRC,RES,ADB
L. Schell	Penn. Power & Light Co.
V. Gupta	Stone and Webster
C. A. Malovrh	Stone and Webster
S. J. Yerardi	Stone and Webster
R. Riley	Cin. Gas & Elec. Co.
D. F. Roth	Penn. Power & Light Co.
M. R. Granback	North. Ind. Pub. Serv. Co.
T. H. Chong	Stone & Webster (CHOC)
J. E. Metcalf	Stone & Webster (Boston)
L. D. Steinert	GE
J. S. Post	GE
P. P. Stancavage	GE
R. F. McClelland	GE
J. C. Black	GE
Ed Fredenburg	Wash. Public Power Supply Sys.
F. Eltawila	NRC,DST,CSB
G. Perez-Ramirez	CNSY/S (Mex)
Glenn E. Gottfried	Sargent & Lundy
1:00 - 5:30 pm	
T. M. Su	NRC,DST,GIB
C. Economos	BNL,NRC
F. Eltawila	NRC,DSI,CSB
D. Gobel	KWU
L. Sack	KWU
D. F. Roth	Penn. Power & Light Co.
L. Schell	Penn. Power & Light Co.
P. Anthony-Spies	KWU
R. W. Riley	Cin. Gas & Elec. Co.
M. R. Granback	North. Ind. Pub. Serv. Co.
T. H. Chong	Stone & Webster (Choc)
T. Wang	Stone & Webster (Choc)
A. Y. C. Wong	Stone & Webster
Glenn E. Gottfried	Sargent & Lundy
S. J. Yerardi	Stone & Webster
C. A. Malovrh	Stone & Webster
H. Chau	Long Island Lighting Co.
J. E. Metcalf	Stone & Webster

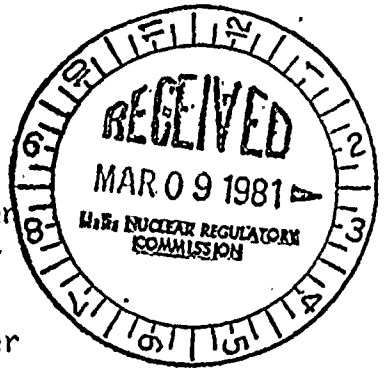
MAR 26 1981

MEETING SUMMARY DISTRIBUTION

Docket File
NRC PDR
Local PDR
TIC/NSIC/Tera
NRR Reading
LB#1 Reading
H. Denton
E. Case
D. Eisenhut
R. Purple
B. J. Youngblood
A. Schwencer
F. Miraglia
J. Miller
G. Lainas
R. Vollmer
J. P. Knight
R. Bosnak
F. Schauer
R. E. Jackson
Project Manager KKiper
Attorney, OELD
M. Rushbrook
OIE (3)
ACRS (16)
R. Tedesco
N. Hughes

NRC Participants:
DLynch
W. Haass
J. Gilray
P. McKee

G. Lear
V. Noonan
S. Pawlicki
V. Benaroya
Z. Rosztoczy
W. Haass
D. Muller
R. Ballard
W. Regan
D. Ross
P. Check
R. Satterfield
O. Parr
F. Rosa
W. Butler
W. Kreger
R. Houston
T. Murphy
L. Rubenstein
T. Speis
W. Johnston
J. Stolz
S. Hanauer
W. Gammill
T. Murley
F. Schroeder
D. Skovholt
M. Ernst
R. Baer
C. Berlinger
K. Kniel
G. Knighton
A. Thadani
D. Tondi
J. Kramer
D. Vassallo
P. Collins
D. Ziemann



bcc: Applicant & Service List