

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

JUL 29 1980

MEMORANDUM FOR: R. M. Satterfield, Chief Instrumentation & Control Systems Branch, DSI

THRU:

M. Srinivasan, Section Leader Instrumentation & Control Systems Branch, DSI

FROM:

R. Kendall Instrumentation & Control Systems Branch, DSI

SUBJECT:

MEETING SUMMARY - DIABLO CANYON 1 & 2, AFWS AUTOMATIC INITIATION AND FLOW INDICATION (ACTION PLAN ITEM II.E.1.2)

On July 25, 1980, members of the staff met with representatives of Pacific Gas and Electric Company (applicant) in Bethesda, Maryland. The ICSB's purpose for attending the meeting was to discuss the conformance of the Diablo Canyon auxiliary feedwater system (AFWS) design to the long term (safety grade) requirements of NUREG-0578, Sections 2.1.7.a (Automatic Initiation of the AFWS) and 2.1.7.b (AFWS Flow Indication). The results of the meeting are summarized below.

The applicant addressed questions prepared by the staff regarding the automatic initiation of the AFWS and flow and steam generator level indication. Specific areas addressed with regard to automatic initiation were the use of operational bypasses and the power sources for the four level control valves (LCV) in the AFWS flow lines. The applicant stated that there is one operational bypass associated with the trip of both main feedwater pumps which is removed administratively. The power for each LCV is from the same emergency bus which supplies the corresponding auxiliary feedwater pump. The staff indicated that the automatic initiation system for the Diablo Canyon, Units 1 and 2 AFWS satisfied the safety grade requirements.

The applicant was provided with a clarification (Enclosure 1) regarding auxiliary feedwater flow indication to the steam generators. The applicant indicated the flow indication and steam generator wide range level indication were upgraded to safety grade requirements, although not in terms of channel independence (e.g., physical separation). The staff did not agree that this indication was safety grade since most areas of the clarification have not yet been addressed. The staff is particularly concerned that all four wide range level channels (1 channel per steam generator) are powered from the same vital bus. The staff concluded that a final determination of the acceptability of the AFWS flow and steam generator level indication could not be made until further documentation was received.

A list of attendees is enclosed.

R. Kendall

Enclosures: As stated

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Instrumentation & Control Systems Branch, DSI

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AUXILIARY SEDUATER FLOW INDICATION

JJ.E.1.2

POSITION

As part of the Lessons Learned recommendations 2.1.7.b the Flow Indication for the Auxiliary Feedwater System must be "upgraded in accordance with safety grade requirements."

CLARIFICATION

The intent of this recommendation is to ensure a reliable indication of auxiliary feedwater system performance. This objective can be met by providing an overall indication system which meets appropriate design principles outlined in IEEE 279-1971.

The staff has determined that the overall flow indication system should meet the following criteria:

- For B&W plants to satisfy these requirements they must provide as a minimum:
 - a. Two AFW flow indicators for each steam generator.
- For Westinghouse and Combustion Engineering plants, to satisfy these requirements they must provide as a minimum;
 - a. One AFW flow indicator for each steam generator and, two Wide Range level indicators for each steam generator.
- 3. For (4 loop) plants with 4 vital buses the following option is acceptable:
 - a. One AFW flow indicator for each steam generator.
 - b. One Wide Range (Lo Lo Level) indicator for each steam generator:
 - c. Two Narrow Range (Hi Level) indicators for each steam generator.
- 4. For all plants, specified accuracies must be justified based on overall system requirements including post-accident monitoring. Documentation must demonstrate that these accuracies are met by the system proposed.

In addition, the staff has determined that the following salient paragraphs of IEEE 279 should be met in the flow indication system design.

JEEE PARAGRAPH

- 4.1* General Functional Requirements
- 4.2* Single Failure
- 4.3, 4.4 Qualification
- 4.6 Channel Independence
- 4.7 Control and Protection System Interaction
- 4.9*, 4.10* Capability for Testing

*These requirements were part of the short term control grade requirements.



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APPLICABILITY ATT PHRS

IMPLEMENTATION DATE January 1981

TYPE OF REVIEW NRR Prc-Implementation Review

DOCUMENTATION REQUIRED

Each licensee/applicant shall provide documentation sufficient to support a reasonable assurance finding by the NRC that the above requirements are met. The documentation should include as a minimum:

1. A discussion of the design with respect to the above paragraphs of IEEE 279.

2. Support information including system design description, logic diagrams, electrical schematics, piping and instrument diagrams, test procedures, and technical specifications.

TECHNICAL SPECIFICATION CHANGES REQUIRED (Yes)

REFERENCES NUREG-0578 Section 2.1.7,b

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LIST OF ATTENDEES



K. Jabbour

- R. Kendall
- D. Thatcher
- J. Stewart
- W. Hyler
- J. Wermiel M. Cunningham
- A. Lakner
- 0. Parr L. Huang
- J. Page

PG&E

- R. Breed
- G. Moore
- R. Fray D. Bley
- R. Kelmenson
- B. Lew

Westinghouse

E. Murphy

FRC

K. Fertner G. Overbeck

NRC

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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 <u>B. C. Buckley</u> Attorney, OELD M. Rushbrook 0IE (3) ACRS (16) R. Tedesco J. Lee NRC Participants: R. Kendall K. Jabbour D. Thatcher J. Stewart W. Hyler J. Wermiel M. Cunningham A. Lakner 0. Parr L. Huang J. Page

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G. Lear V. Noonan S. Pawlicki V. Benaroya Z. Rosztoczy W. Haass D. Muller R. Ballard W. Regan D. Ross P. Check R. Satterfield 0. Parr F. Rosa W. Butler W. Kreger R. Houston T. Murphy L. Rubenstein T. Speis W. Johnston J. Stolz S. Hanauer W. Gammill F. Schroeder D. Skovholt M. Ernst R. Baer C. Berlinger K. Kniel

- G. Knighton
- A. Thadani
- D. Tondi

bcc: Applicant & Service List

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