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

FEB 20 1985

Docket No. 50-352/353

FACILITY: Limerick Generating Station, Units 1 and 2

LICENSEE: Philadelphia Electric Company

SUBJECT: SUMMARY OF MEETING ON INDEPENDANT DESIGN VERIFICATION PROGRAM HELD JANUARY 10, 1985

On January 10, 1985 members of the NRC staff, Westec Services (NRC Contractor) met with representatives of the Philadelphia Electric Company (licensee), Bechtel Power, General Electric and Torrey Pines Technology (TPT) in Bethesda, Maryland to discuss the final IDVP report provided by TPT's letter to the licensee dated December 12, 1984. A list of attendees is enclosed.

The meeting began with TPT (Stu Bresnick) presenting an overview of the IDVP using slides as shown in Enclosure 2. The meeting also included a discussion of the licensee's associated corrective action plans for findings (PFRs) identified in the final report as summarized below.

(1) Regarding PFR-019 and PFR-022 the NRC staff expressed its concern that the licensee's HELBA walkdown (performed by Bechtel) apparently excluded: identification of jet impingement effects on piping and supports that are equal to or greater than the postulated broken pipe. The NRC staff indicated that it would consult with its Mechanical Engineering Branch (not present at this meeting) with respect to the adequacy of this practice relative to the guidance in the Standard Review Plan.

(2) Regarding PFR-032, TPT stated that the generic aspects of this finding were investigated as required by TPT's procedures. Since the reasons supporting TPT's assessment of the generic findings are not included in the final report, TPT (A. Schwartz) provided documentation in the meeting of these reasons (See Enclosure 3). The NRC staff considered TPT's response to the generic aspects of this finding to be adequate.

(3) Regarding PFR-023 and PFR-024, the licensee stated that the corrective action plans had been completed. These findings address errors and inconsistencies in the safe shutdown analysis following a postulated high energy line break. The NRC staff indicated that to close out this item, as well as all other findings where implementation of the corrective action plan had not been verified by TPT, an inspection would be performed at the offices of Bechtel-San Francisco. During the discussion of these PFRs Bechtel indicated that they had demonstrated through analysis that jet impingement would not

cause instrumentation lines to crimp. The staff has subsequently determined the corrective actions to be acceptable.

(4) Finding PFR-016 addressed an overstressed containment penetration sleeve for the core spray system. Specifically, the ASME Code allowable stress was calculated to be exceeded by 18% in the upset condition. Bechtel representatives stated that the core spray penetration was not bounded by the analysis performed on the main steam and feedwater penetrations, but that all remaining penetrations had been verified to comply with the Code allowable stress using section NE-3000 of the Code. Furthermore, the core spray containment penetration sleeve's wall thickness had been verified by UT examination to be at least 6% greater than the nominal wall thickness, but the increase over nominal wall thickness was not used in the analysis. Bechtel representatives also confirmed that no corrosion allowance was required for the containment sleeve per the design specification. Bechtel representatives stated that all analyses associated with this finding have been completed and have demonstrated that the Code allowables have been met. The NRC staff indicated that these analyses would also be subject to inspection. The staff has subsequently determined the analyses to be acceptable.

(5) Regarding PFR-020 and PFR-034, TPT indicated that the tensile pullout forces were considered for the concrete design as demonstrated in the associated Bechtel calculation. The NRC staff considered this response to be acceptable.

(6) Regarding the corrective action plan for PFR-026, the General Electric representative (Rod Pence) indicated that all calculations had been performed and/or verified thus demonstrating that the original design was adequate. Some minor inconsistencies were found which required revisions to a few drawings, however no hardware changes were required. The NRC staff considered this response to be adequate.

(7) In addressing why the IDVP conclusions addressed only the core spray system, TPT stated that they had indeed judged the design process for Limerick to be adequate as stated on page 80, Volume II of the final report. The specific conclusion addressed only the core spray system since that is all the IDVP program plan identified. The NRC staff considered this response to be adequate.

(8) PFR-014 indicated that Chicago Bridge and Iron, the subcontractor for the reactor vessel, had not performed a Code required thermal ratcheting calculation for the reactor vessel nozzles. The corrective action for Limerick included performing the thermal ratcheting calculation for all reactor vessel nozzles, which the NRC staff considers adequate for Limerick.

Original signed by:

R. E. Martin, Project Manager
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Enclosure: As stated

cc: See next page

LB#2/PM	LB#2/BC
RMartin:lb	ASchwencer
02/20/85	02/20/85

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Enclosure 1

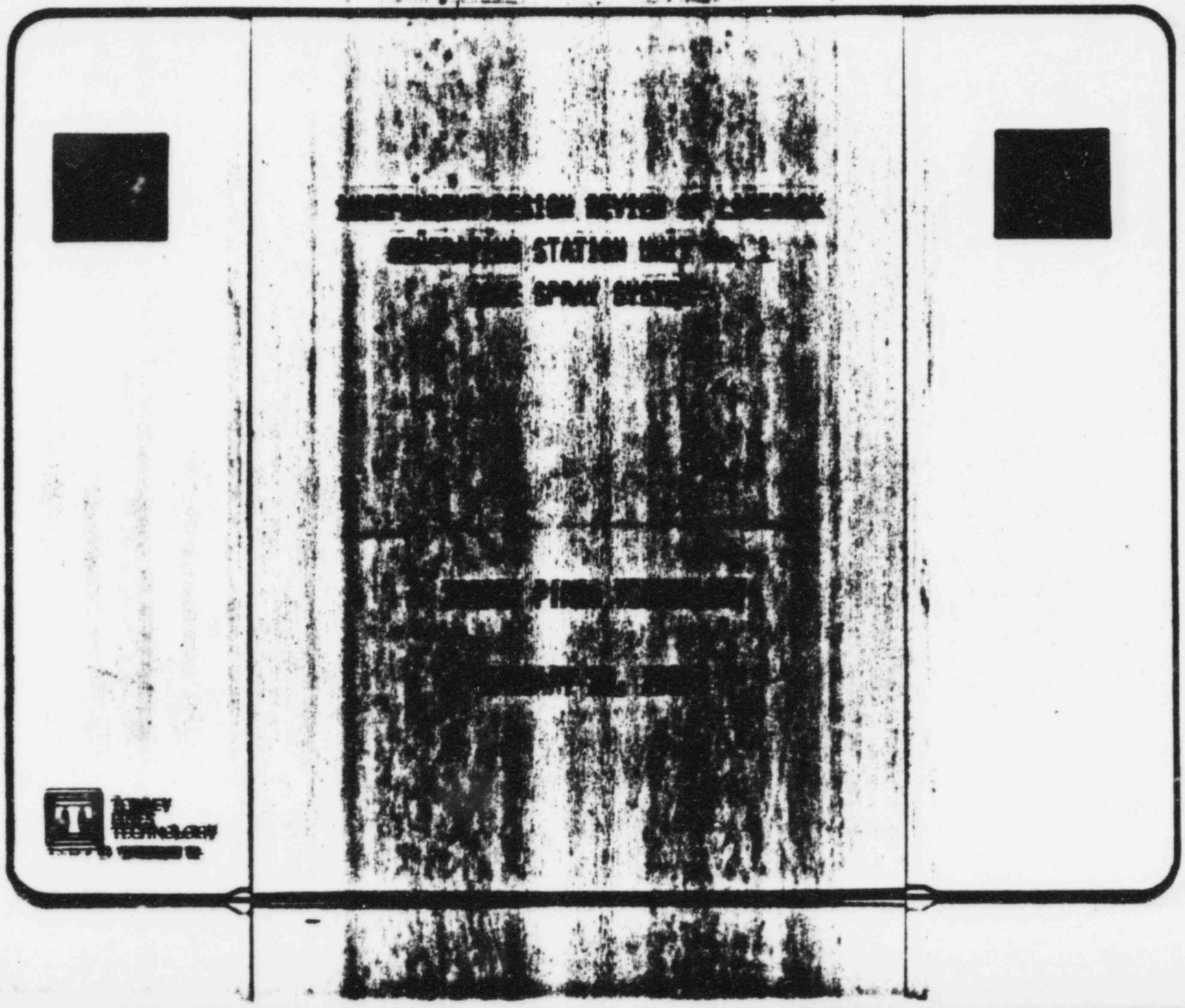
LIMERICK IDVP MTG
January 10, 1985

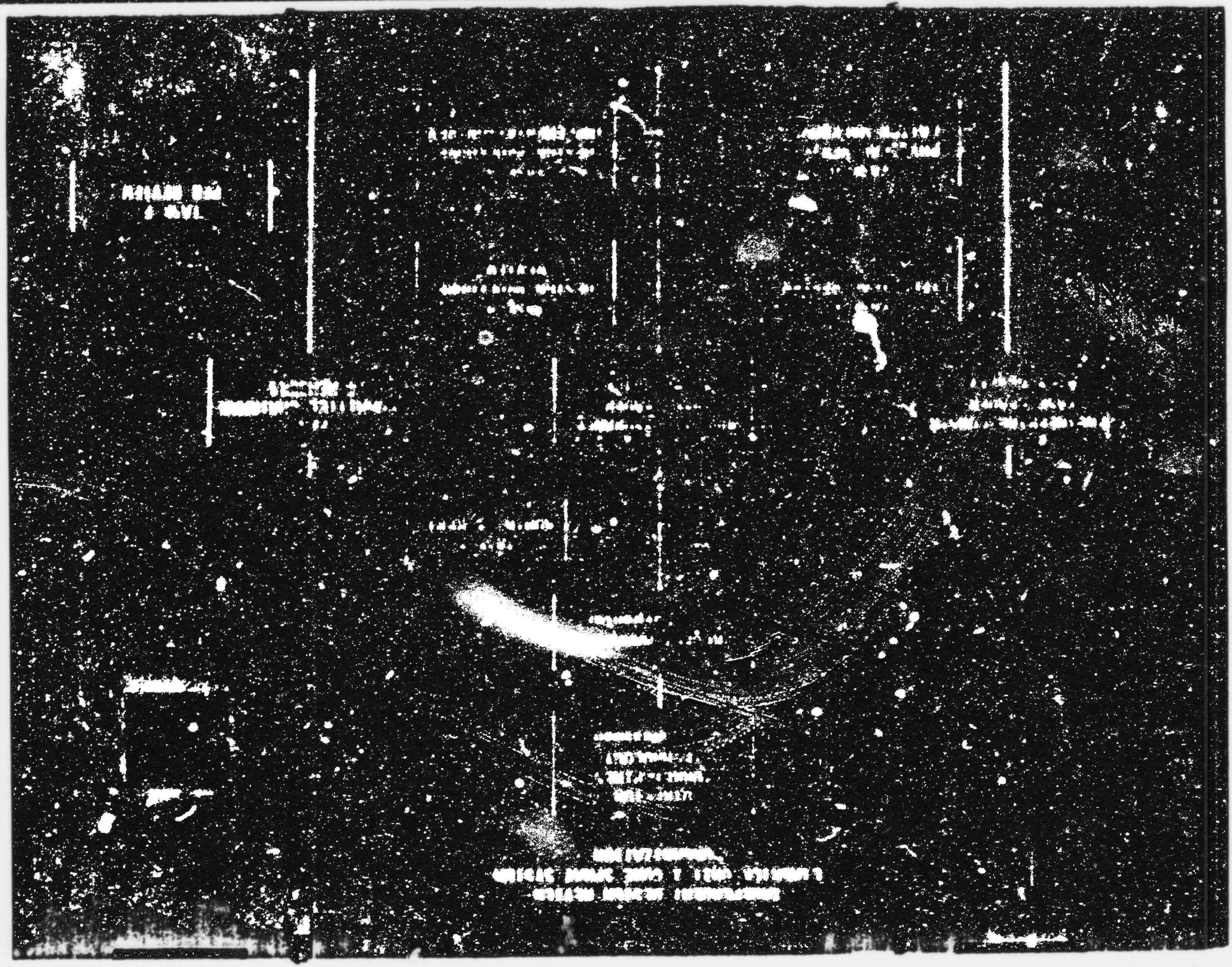
NAME	ORGANIZATION
E. Imbro	NRC/IE
T. J. Delgaizo	Westec Svcs
A. Schwartz	TPT
L. D. Johnson	TPT
S. Bresnick	TPT
Rod J. Pence	GE
T. E. Bostrom	Bechtel
S. J. Ployhar	Bechtel
R. Schlueter	Bechtel
H. D. Honan	PECo
G. J. Beck	PECo
J. W. Gilray	NRC/IE
R. E. Martin	NRC/PM
J. L. Milhoan	NRC/IE
R. Parkhill	NRC/IE

Enclosure 2

View Graphs Used

In Meeting





INDEPENDENT DESIGN REVIEW

LIMERICK UNIT 1

SUMMARY OF TASKS

TASK	TITLE
A	DESIGN PROCEDURE REVIEW
B	DESIGN PROCEDURE IMPLEMENTATION REVIEW
C	TECHNICAL REVIEW
D	PHYSICAL VERIFICATION WALKDOWN
E	PROCESSING OF POTENTIAL FINDINGS
F	ADMINISTRATIVE AND REPORTING

TORREY PINES TECHNOLOGY

GA Technologies Inc.

TASK A — DESIGN PROCEDURE REVIEW

OBJECTIVE — VERIFY COMPLIANCE OF DESIGN PROCEDURES AND CONTROLS WITH REQUIREMENTS

ACTIVITY — REVIEW BECHTEL AND GE DESIGN CONTROL SYSTEM

CRITERIA — PSAR QA SECTION 10CFR50, APPENDIX B
ANSI N45.2

TORREY PINES TECHNOLOGY
A Division of GA Technologies Inc.

TASK B — DESIGN PROCEDURE IMPLEMENTATION REVIEW

OBJECTIVE — VERIFY IMPLEMENTATION OF THE DESIGN PROCEDURES AND CONTROLS IDENTIFIED IN TASK A

ACTIVITY — REVIEW DESIGN DOCUMENTS FOR EVIDENCE OF COMPLIANCE WITH DESIGN PROCEDURES AND CONTROLS

CRITERIA — DESIGN PROCEDURES AND CONTROLS IDENTIFIED IN TASK A

TORREY PINES TECHNOLOGY
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TASK C — TECHNICAL REVIEW

OBJECTIVE — VERIFY TECHNICAL ADEQUACY OF THE CORE SPRAY SYSTEM DESIGN

ACTIVITY — PERFORM DETAILED TECHNICAL REVIEW OF THE STRUCTURAL, MECHANICAL, ELECTRICAL, CONTROL SYSTEM, AND FLUID SYSTEM DESIGN OF SELECTED PORTIONS OF THE CSS SYSTEM

CRITERIA — APPLICABLE CODES AND STANDARDS
FSAR DESIGN BASES
GOOD ENGINEERING PRACTICE

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TASK D	PHYSICAL VERIFICATION WALKDOWN
OBJECTIVE	DETERMINE THAT CONSTRUCTION OF SELECTED PORTIONS OF THE CSS SYSTEM IS IN ACCORDANCE WITH DESIGN DOCUMENTATION
ACTIVITY	PHYSICAL VERIFICATION (WALKDOWN)
CRITERIA	DESIGN DOCUMENTS

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[redacted] SK E

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ACTIVITY

PROCESSING OF POTENTIAL FINDINGS

TO RESOLVE QUESTIONS DURING REVIEW PROCESS

- HIGHLY FORMALIZED TO ASSURE NO PRESSURE COULD SWAY REVIEWER'S TECHNICAL JUDGMENT
- FIVE LEVEL REVIEW
  - TECHNICAL REVIEWER - INITIATOR
  - TECHNICAL TASK LEADER
  - ORIGINAL DESIGN ORGANIZATION
  - FINDINGS REVIEW COMMITTEE
  - PROJECT MANAGER
- CLASSIFICATION OF POTENTIAL FINDINGS
  - FINDING - VALID DEVIATION - SAFETY HAZARD CRITERIA
  - OBSERVATION - VALID DEVIATION - DOES NOT MEET CRITERIA
  - INVALID - CONCERN ELIMATED
- CORRECTIVE ACTION PLAN REQUIRED FOR EACH FINDING

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TASK F ADMINISTRATIVE AND REPORTING

OBJECTIVE PREPARATION OF PROGRAM MANAGEMENT AND PERIODIC STATUS REPORTS AND A FINAL EVALUATION REPORT

ACTIVITY ISSUE BIWEEKLY REPORT
ISSUE FINAL REPORT

TORREY PINES TECHNOLOGY

LIMERICK DESIGN REVIEW - PER SUMMARY

PER CLASSIFICATION

	INVALID	OBSERVATION	FINDING	TOTAL PERs
TASK A	0	0	0	0
TASK B	1	7	2	10
TASK C	6	10	6	22
TASK D	1	3	0	4
	8	20	8	36

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LIMERICK DESIGN REVIEW - PROGRAM EFFORT

- o TOTAL EFFORT = 7,300 HOURS
- o TIME SPAN = 5/84 - 11/84
- o TOTAL NO. OF PARTICIPANTS = 24
- o TECHNICAL DISCIPLINES = QA, ME, EE, CIVIL, I&C, MATERIALS
- o AVERAGE NUCLEAR EXPERIENCE = 17 YEARS
- o LOCATIONS = LIMERICK SITE, PECo (PHILADELPHIA), GE (SAN JOSE)
  BPC (SAN FRANCISCO), TPT (SAN DIEGO)
- o TOTAL NO. DOCUMENTS REVIEWED = 1060+

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Enclosure 3
for PFR-032

Q. Were the generic aspects of jet impingement loads on reactor vessel nozzles considered as a result of PFR 032?

A. In response to the question on generic aspects of jet reaction loads on reactor vessel nozzles (PFR 032), the generic aspect of these loads were considered as part of the PFR processing procedure (2524-PD-5) which requires that any deviation identified be considered for generic effects that might possibly affect safety. The investigation was performed for PFR 032, and it was determined that generic effects were not likely (page 6 of PFR 032). Specific considerations leading to the non-generic conclusion were not documented in the PFR (per the procedure) but are delineated in the following paragraph for NRC's information.

In the process of reviewing the impact of PFR 032, an analysis was performed on the core spray nozzle to evaluate the effects of pipe whip loading. This analysis, which had a large degree of conservatism, showed that the vessel had considerable margin to withstand the pipe whip loading. The general configuration of other large lines was then reviewed and it was noted that these lines typically had pipe whip restraints which were located closer to the vessel than the core spray line. These closer restraints would be able to restrain the pipe from significant whipping and would produce relatively lower loads on vessel nozzles, since the primary break load would be accomodated by the restraint rather than the vessel nozzle.