U.S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos.	50-206/90-18, 50-361/90-18, 50-362/90-18
Docket Nos.	50-206, 50-361, 50-362
License Nos.	DPR-13, NPF-10, NPF-15
Licensee:	Southern California Edison Company Irvine Operations Center 23 Parker Street Irvine, California 92718
Facility Name:	San Onofre Units 1, 2 and 3
Meeting at:	Walnut Creek, California
Meeting conducted:	March 14, 1990
Prepared by:	C. W. Caldwell, Senior Resident Inspector

Approved By: P. H. Johnson, Chief — 4/10/90 Date Signed
Reactor Projects Section 3

Summary

A Management Meeting was held on March 14, 1990 to discuss issues related to Unit 1 deficiencies identified and reported by the licensee during the past year, including the safety injection alignment delay discussed in Licensee Event Report 89-11, Revision 1. In addition, the licensee provided a status on engineering program improvements and the Design Basis Documentation (DBD) review.

DETAILS

1. Meeting Participants

Nuclear Regulatory Commission

J. Martin, Regional Administrator
R. Zimmerman, Director, Division of Reactor Safety and Projects
C. Trammell, Acting Director, Project Directorate V, NRR
A. Johnson, Enforcement Officer
S. Richards, Chief, Reactor Projects Branch
P. Johnson, Chief, Reactor Projects Section 3
R, Huey, Chief, Engineering Section
C. Caldwell, Senior Resident Inspector
L. Kokajko, Units 2 and 3 NRR Project Manager
J. Tatum, Unit 1 NRR Project Manager

Southern California Edison Company

H. Ray, Vice President, Nuclear Engineering, Safety, and Licensing (NES&L)
D. Nunn, Manager of Nuclear Engineering and Construction
D. Rosenblum, Manager of Nuclear Regulatory Affairs
M. Merlo, Manager of Nuclear Engineering
M. Short, Design Basis Document Project Manager
J. Reilly, Station Technical Manager
R. Ornelas, Unit 1 Licensing Manager

2. Management Meeting Background

On March 14, 1990, a Management Meeting was held in the Region V Office in Walnut Creek, California among the individuals identified in Paragraph 1. The purpose of this meeting was to discuss issues related to Unit 1 design deficiencies which have been identified and reported by the licensee during the past year. One discussed in particular was the issue involving safety injection alignment delays, as discussed in Licensee Event Report (LER) 89-11, Revision 1. In addition, the licensee provided a status on engineering program improvements and the Design Basis Documentation (DBD) review.

The meeting convened at 1:30 p.m.

3. Introduction

Mr. Martin opened by stating that the purpose of the meeting was to review recent technical design problems in Unit 1 and to assess the progress of engineering program initiatives since the last Management Meeting. He noted that, since the April 23, 1989 Unit 1 restart letter, a number of LERs had been issued discussing apparently significant design deficiencies. LER 89-11, "Safety Injection Alignment Delay Contrary to the Safety Analysis," was one particularly noteworthy issue concerning safety injection alignment delay problems that could potentially lead to exceeding the peak cladding temperature acceptance

criteria. As a result, there was a perception on the part of the NRC that some of the recently identified deficiencies could be more significant than anticipated by the study reported in the licensee's April 23, 1989 letter. He stated that the NRC needed to understand the licensee's assessment of these problems both individually and as a whole. In addition, the potential identification of additional technical problems needed to be discussed further.

4. Discussion of Identified Design Deficiencies

A copy of slides used during the licensee's presentation is enclosed as an Attachment to this report.

Mr. Ray began by stating that SCE had only recently tried to assess the collective significance and implications of these issues. SCE has attempted to take appropriate actions on each item identified thus far. In addition, SCE has been reviewing implications for the future in light of the fact that the plant will be operating for another 3 1/2 months before the next planned outage. He stated that SCE is also assessing where they expect to be at the end of the 1990 refueling outage.

Mr. Ray stated that SCE considered there to be eight technical issues which had been identified so far.

The discussion concerning the safety injection alignment delay problem focused on the fact that the analysis discussed in LER 89-11-01 assumed the worst case scenario, based on relatively conservative assumptions. The assumptions on which this scenario was based included the following:

- A large loss of coolant accident (LOCA) concurrent with a loss of offsite power;
- A degraded voltage condition at 95% of full rated voltage;
- An initial reactor power of 100% (Unit 1 does not operate at greater than 92% in the reduced temperature configuration);
- A safety injection header purge in process (currently purges take place for only 30 minutes per month);
- A worst case combination of mini-flow valve delays;
- A three-second delay of water to the core;
- A single failure of one train of safety injection; and
- An adiabatic heatup (i.e., assuming no heat transfer to the cladding);

Taking the remoteness of all of these assumptions into consideration, the licensee considered there to be a very low probability that the peak cladding temperature acceptance criterion of 2350 degrees would be exceeded. The preliminary analysis indicated that temperature would

exceed 2300 degrees for approximately 20 seconds. In addition, the fuel cladding damage threshold of 2450 degrees (for stainless steel clad) would definitely not be challenged.

Mr. Martin concluded the discussion of the safety injection alignment delay by indicating that the NRC has been reviewing all LERs, but that a collective look at these items has not been done since last year. He also indicated that, based on the licensee's discussion, it appeared that this issue was not as significant as it had appeared to be based upon initial review of the LER.

The remainder of the issues were discussed with significant points as identified in the enclosed slides.

5. Program Enhancements

SCE provided a status on engineering program improvements and the DBD review effort. Significant activities are identified in the enclosed slides.

6. Closing Remarks

Mr. Ray summarized by stating that none of the problems identified fall into a category of a simple system failure. Other supporting or contributing factors are necessary for each of the problems to manifest itself in a significant failure. In retrospect, SCE considered that additional problems would be identified in Unit 1 as the enhanced engineering efforts and DBD reviews ensue, but that the significance of these items should remain relatively low. Mr. Ray also indicated that a great deal of work will be completed prior to restart from the upcoming Unit 1 outage. After the scheduled activities are completed, SCE will be able to say with high confidence that additional significant problems will not be encountered.

Mr. Martin stated that he considered this to have been a useful session, and indicated that he understood that SCE still plans to implement the same basic plan in light of these findings. He indicated that the NRC does not want to inhibit the licensee's initiative in finding and correcting safety problems, and that the significance of the deficiencies reported in the LERs of the past year is not much different than had been anticipated. He also noted that most of the findings to date were a result of more disciplined engineering design work or because of proper questioning of nonconformance reports, design change packages, or other reviews; he acknowledged that the major thrust of the DBD reviews was just beginning.

The meeting adjourned at 4:00 p.m.

NRC / SCE MEETING

UNIT 1

WEDNESDAY, MARCH 14, 1990

WALNUT CREEK, CALIFORNIA

Overview

- Seven Technical Issued Have Been Identified on SONGS 1 Since Last Review
- Safety Significance Needs to be Gauged and Compared to Previous Expectations
- Appropriateness of Current Engineering Upgrade Efforts Needs to be Reassessed

SCE Approach

- Review Each Technical Issue
  - Identify Method of Discovery
  - Assess, Best Estimate, Safety Significance
  - Evaluate Lessons Learned

SCE Conclusions

- Most Issues Discovered by More Thorough Engineering
- Overall Safety Significance
  - Each Issue Individually had Negligible Safety Significance
  - Two Issues Could Occur in Combination , but Nevertheless had Low Safety Significance
  - Evaluation of One Issue Remains to be Completed
- Engineering Upgrade Program Remains Appropriate

Background

- 14 Technical Issues Were Identified during Cycle 10 Refueling Outage
- An Initial Assessment Reviewed 12 Issues
- A Supplemental Assessment Reviewed 2 Other Issues
- SCE Review Concluded that Return to Service Was Acceptable

Background (cont.)

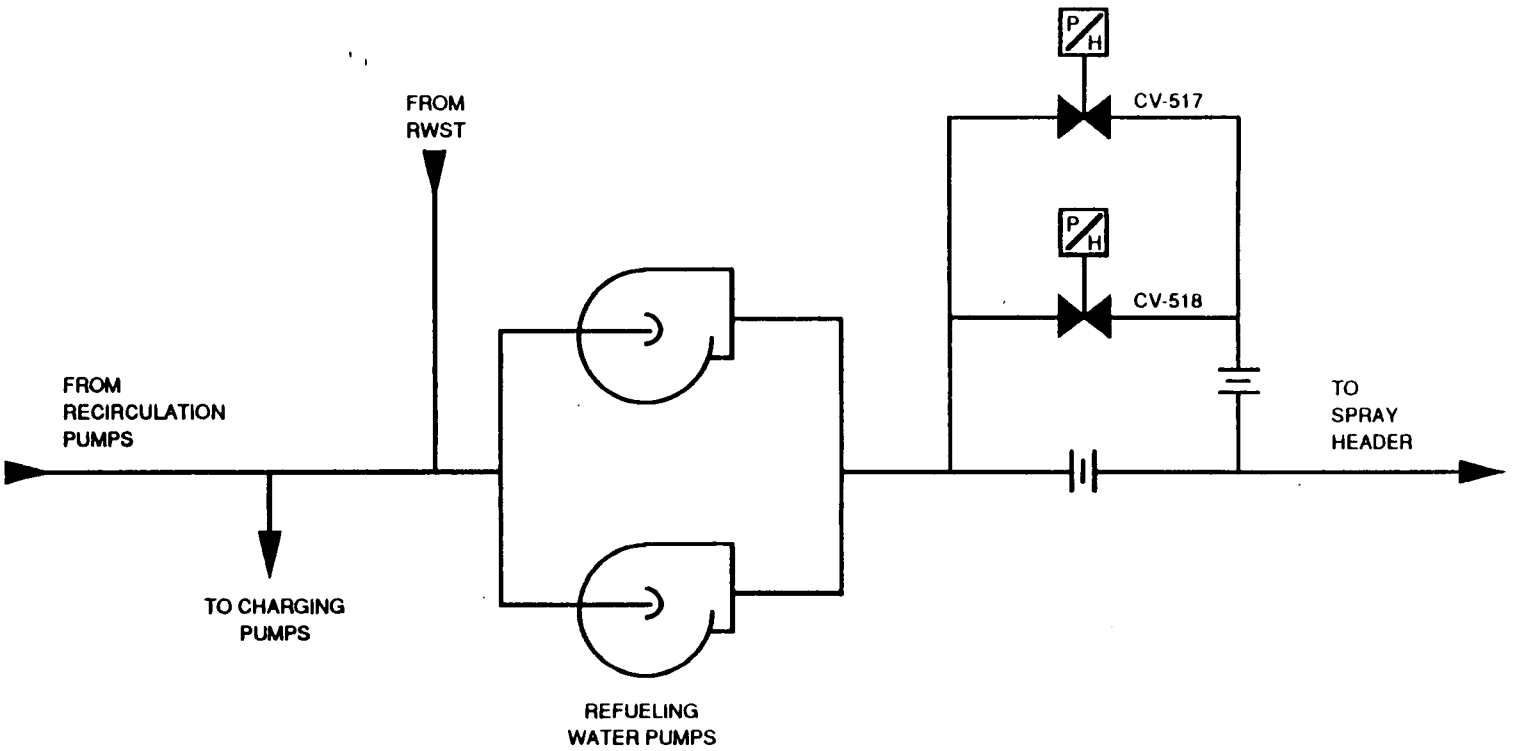
- Supplemental Assessment of Technical Issues:
  - Safety Injection Alignment Delay
  - Overpressure Mitigation System Setpoint

TECHNICAL ISSUES

Issue	Discovery	Significance
• Auxiliary Feedwater Actuation from Wide Range Level Instrumentation	Self-revealing	Negligible
• Valve Operator Affecting Containment Spray Flow	SCE review	Negligible
• Valve Single Failure Potentially Affecting Hot Leg Recirculation	SCE review	Negligible
• Refueling Water Storage Tank Flow Diversion	SCE review	Negligible
• Recirculation Boundary Spring-Loaded Check Valve	SCE review	Negligible
• AFW Water Hammer Requirement	SCE review	Negligible
• Incorrect Valve Failure Mode	SCE review	Negligible

Overall Conclusions

- DBD Effort and Major Engineering Upgrade Reviews Will Continue to Identify Technical Issues
- Overall Safety Significance Will Likely Be Low
- Engineering Upgrade Program is Effective in Increasing Thoroughness and Attention to Detail of Technical Work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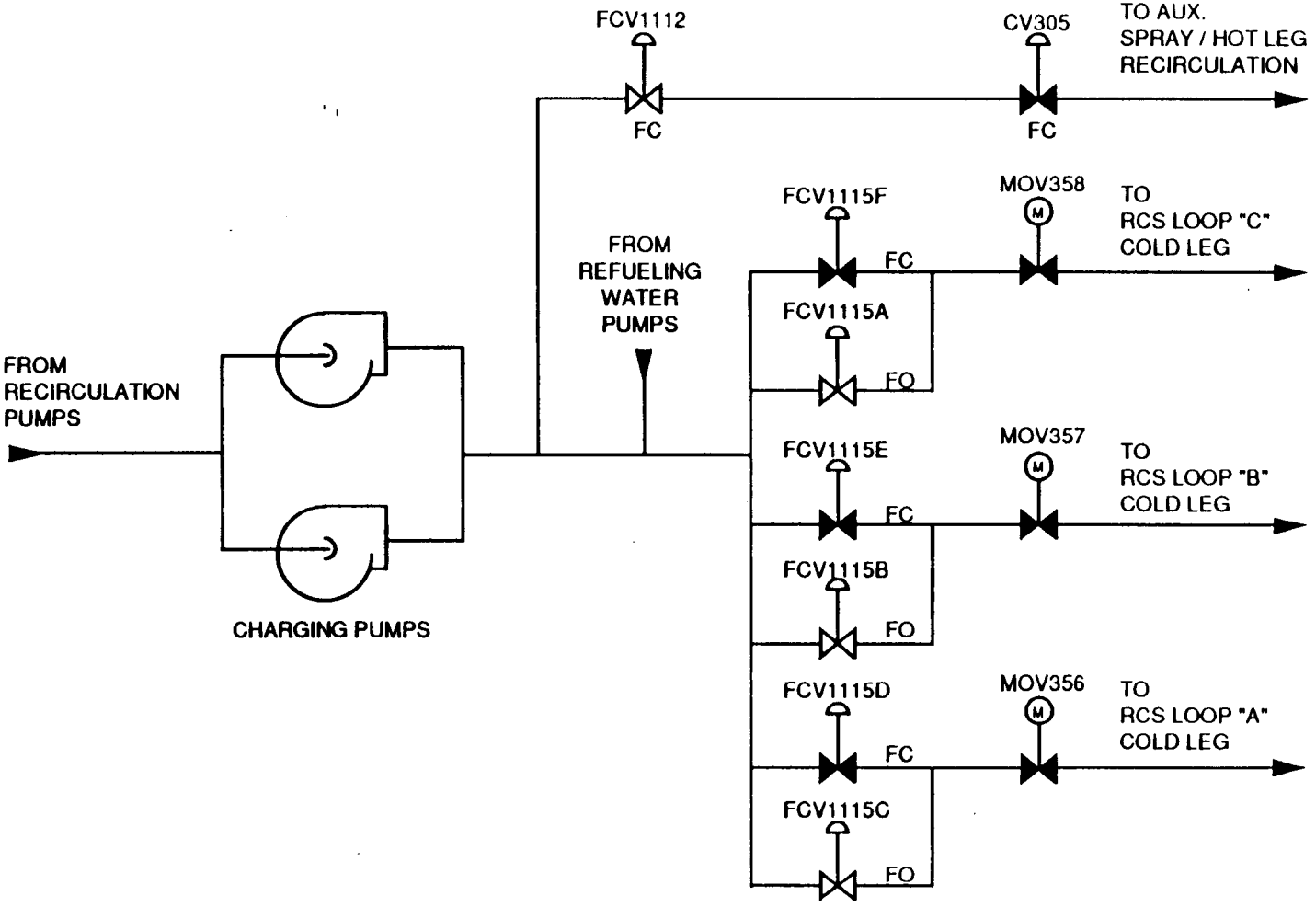
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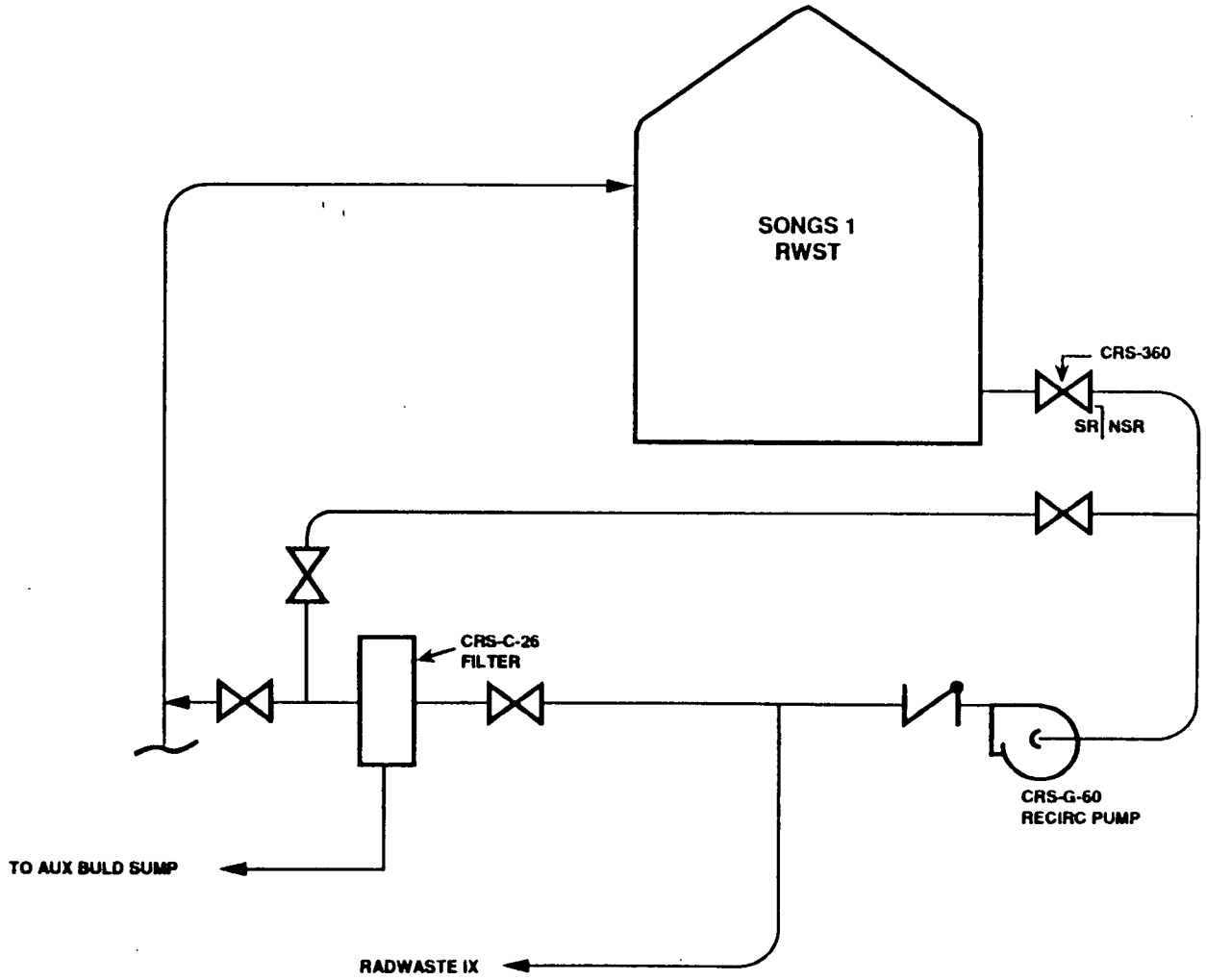
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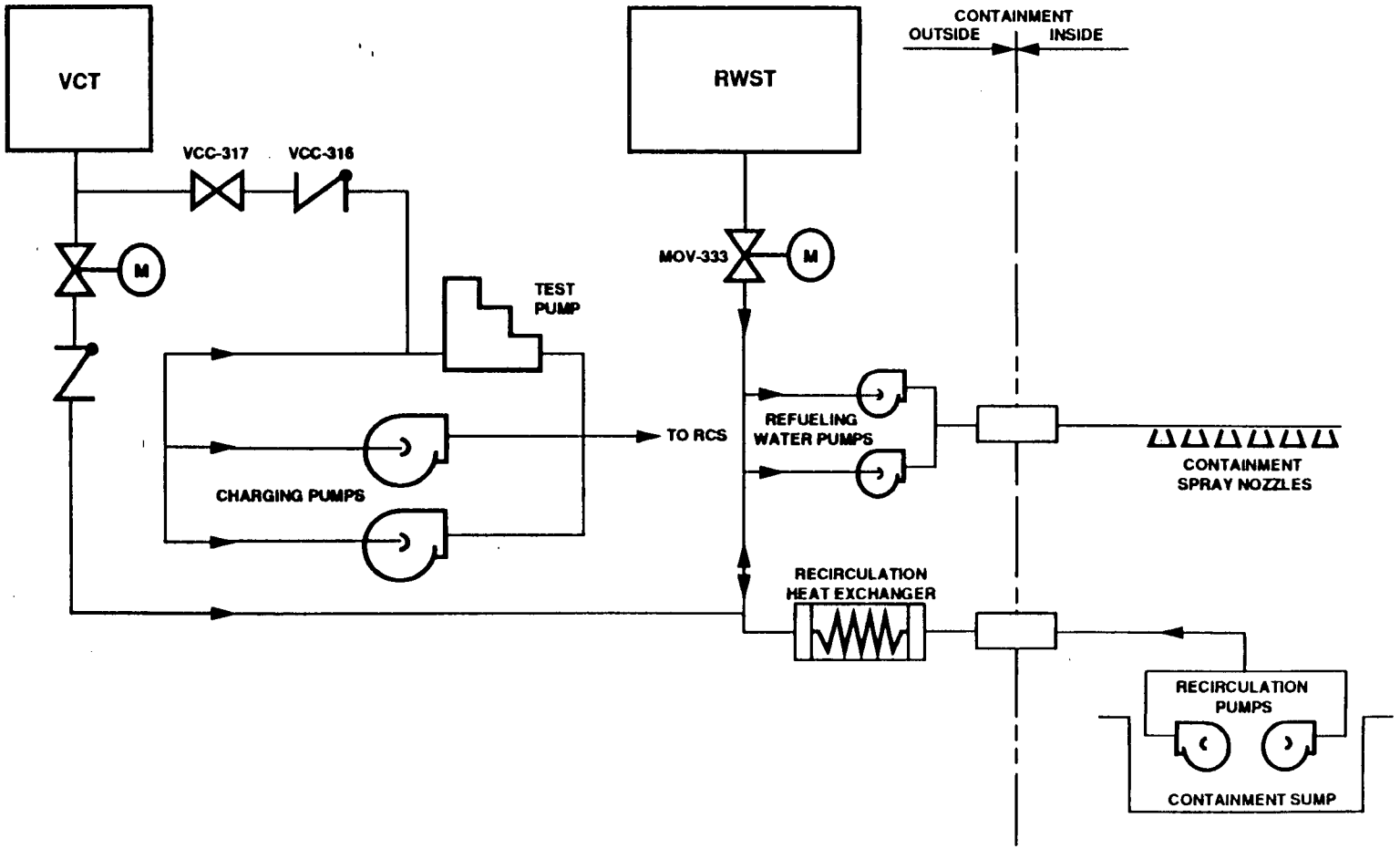
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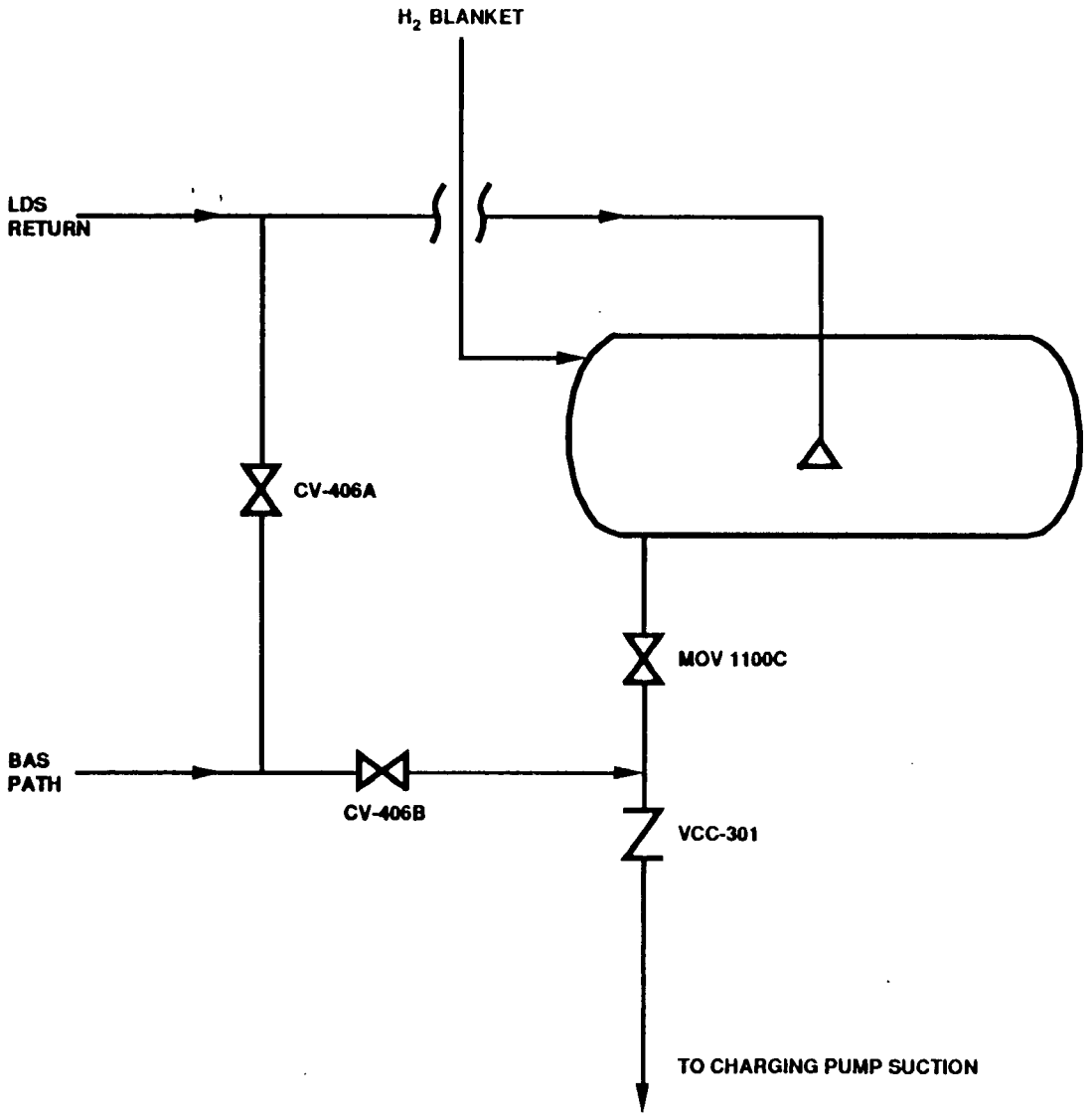
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1990 Engineering Activities

- Single Failure Reanalysis
- EQ Improvement -- F/C 1/91
- Unit 1 Reload and Accident Analysis Improvements
- SR / NSR Boundary Valve Analysis
- Instrument Air Testing IAW GL 88-14
- Service Water System Review and Testing IAW GL 89-13
- Electrical System Confirmatory Analysis

DESIGN BASIS DOCUMENTATION SCHEDULE

1990

System/Topical	Start	Finish
Safety Injection	02/90A	12/90F
Recirculation and Spray	01/90A	10/90F
Single Failure Topical	04/90F	06/90F
Environmental Qualification Topical	06/89A	12/90F
Accident Analysis Topical	12/89A	09/90F
Component Cooling Water	02/90A	11/90F
Salt Water Cooling	02/90A	12/90F
Instrument Air and B/U Nitrogen	01/90A	10/90F
Nuclear Instrumentation System	04/90F	11/90F
Human Factors Topical	04/90F	10/90F
4kV, 480V Electrical System	04/90F	12/90F

Design Basis Documentation

Lessons Learned

- Use of SCE Engineers
  - 16 SCE engineers in program for 1990
- Verification
  - Substantial resource commitment
  - Verify design "as you go"
  - System interfaces require special focus
- Planning
  - Detailed review methods
  - Peer reviews have been added
  - Verification of system interfaces requires a long term plan
- On-going
  - Walkdown program scope and criteria
  - Uncertainty and margins