

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Conference Report No. 50-387/84-11

Docket No. 50-387

License No. NPF-14

Licensee: Pennsylvania Power and Light Company  
2 North Ninth Street  
Allentown, Pennsylvania 18101

Facility Name: Susquehanna Steam Electric Company, Unit 1

Meeting At: USNRC, Region I, King of Prussia, Pennsylvania

Meeting Conducted: March 20, 1984

Prepared By: Gene Kelly  
E.M. Kelly, Project Engineer

May 23, 1984  
date

Approved By: E.C. McCabe  
E.C. McCabe, Chief, Project Section 1C

5/25/84  
date

Meeting Summary:

Enforcement conference at NRC Region I on March 20, 1984, to discuss the findings of Special Inspection Report 50-387/84-11. This report described system lineup problems which resulted in the High Pressure Coolant Injection (HPCI) system and the Reactor Core Isolation Cooling (RCIC) system being inoperable, in violation of the Technical Specifications. HPCI inoperability was caused by operator failure to make the system operable before exceeding 150 psig primary pressure, and was corrected in about two hours. RCIC inoperability was caused by RCIC Room overtemperature, the result of mispositioned valves, and was corrected in under two hours.

The meeting was attended by NRC and PP&L management, and lasted approximately 1½ hours.

## DETAILS

### 1. Participants

#### Pennsylvania Power and Light Company (PP&L)

B. D. Kenyon, Vice President, Nuclear Operations  
H. W. Keiser, Superintendent of Plant  
W. Barberich, Manager, Nuclear Licensing  
H. Palmer, Supervisor of Operations  
D. Wood, Compliance Engineer

#### Nuclear Regulatory Commission (NRC)

T. E. Murley, Regional Administrator  
R. Starostecki, Director, Division of Project and Resident Programs  
J. Gutierrez, Regional Counsel  
D. Holody, Enforcement Specialist  
E. Blackwood, Deputy Director, Enforcement  
E. Greenman, Chief, Project Branch 1, DPRP  
R. Bellamy, Chief, Radiological Protection Branch, DETP  
E. McCabe, Chief, Project Section 1C  
L. Bettenhausen, Chief, Test Programs Section  
R. Jacobs, Senior Resident Inspector, Susquehanna  
L. Plisco, Resident Inspector  
R. Perch, Licensing Project Manager, NRR  
E. Kelly, Project Engineer, DPRP  
P. Farron, IE

### 2. Introduction

The enforcement conference was held at the request of NRC Region I to discuss the specifics of Special Inspection Report Number 50-387/84-11, conducted during February 21-24, 1984 and issued on March 8, 1984, involving the inoperability of the High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) systems on February 22, 1984. HPCI was inoperable for a period of two hours, in violation of Technical Specification (TS) Limiting Condition 3.5.1.c which requires an operable system whenever the plant is in Startup Condition 2 with reactor steam dome pressure in excess of 150 psig, because operators apparently failed to realize this TS requirement and had not therefore readied HPCI for operation as the plant approached (and exceeded) 150 psig on February 22, 1984. A power supply (Topaz inverter) for HPIC instrumentation was de-energized during this time, and would've also prevented proper HPCI turbine operation. Although not required by TS, the RCIC system was also disabled during this time, as a result of an improperly implemented valve lineup check which allowed for mispositioned steam line drain valves and subsequently caused RCIC room high temperature.

### 3. Presentation

PP&L was asked to recount the details surrounding the HPCI and RCIC event of February 22, 1984, as well as their analysis of other recent events which involved inadequacies in controlling system lineups and operator response to alarms. The attached presentation describes the HPCI/RCIC event, along with a number of spills of radioactive fluids, including their cause and significance. Major corrective actions were outlined including an extensive checkoff list verification performed immediately after the HPCI/RCIC event.

### 4. Concluding Statements

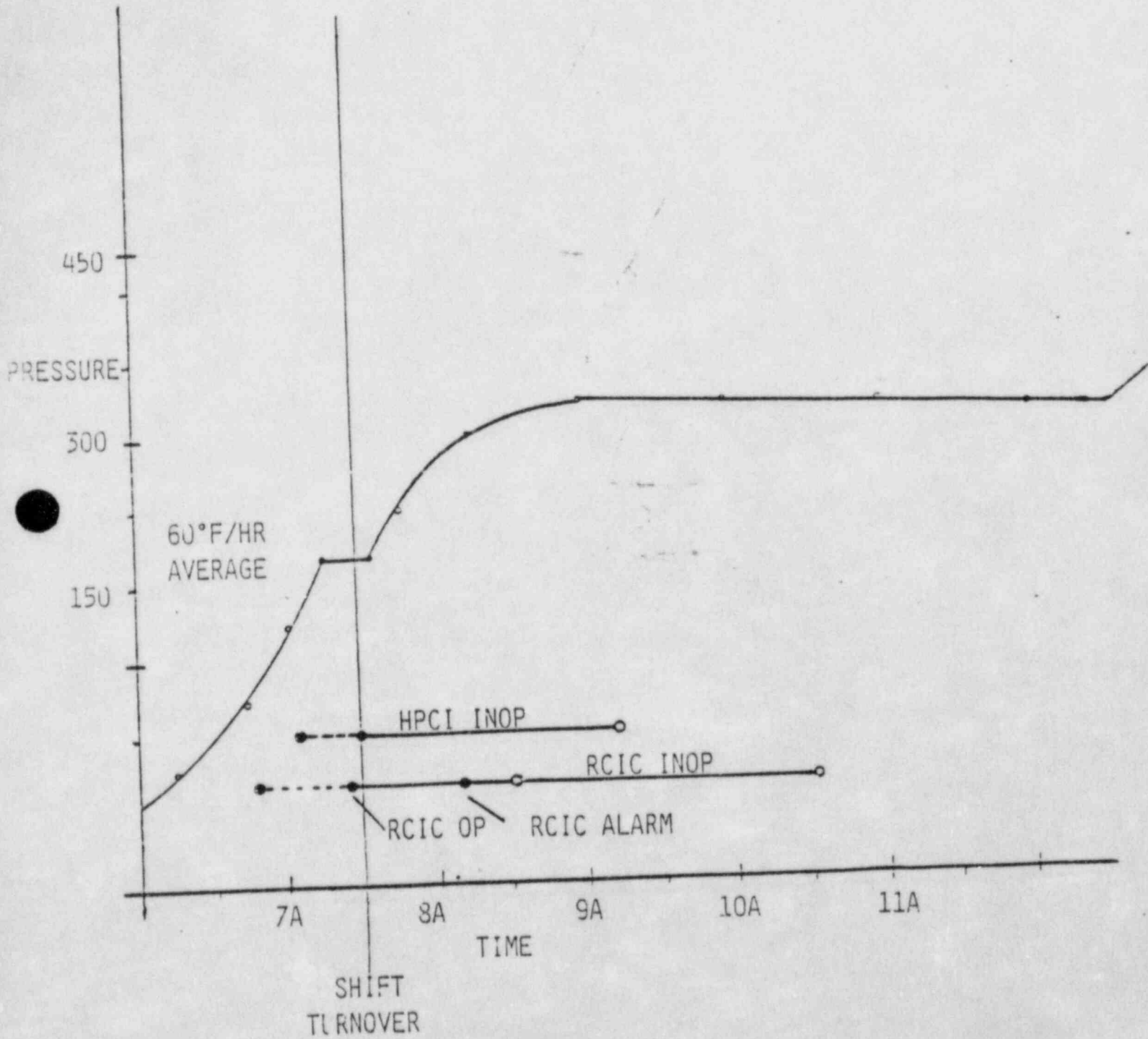
The licensee concluded that, while none of these events individually were of any major immediate safety significance, the PP&L performance goal would still be to improve operations and achieve "zero defects". No trends were identified, in PP&L's analysis of the events discussed, which were indicative of a decline in the quality of plant operations. Valve status control was concluded to be satisfactory. The HPCI/RCIC event was viewed by PP&L as a training problem, involving a better understanding of certain TS requirements. The spills (eight discussed) were attributed to 5 cases of equipment malfunction and 3 cases involving personnel error. Timely and aggressive operator response and action was concluded by the licensee in their review of these spills. NRC Region I management acknowledged the licensee's open discussion, and indicated that they would be informed of appropriate enforcement action at some later date.

PP&L PRESENTATION  
REGION I ENFORCEMENT CONFERENCE  
MARCH 20, 1984

HPCI AND RCIC INOPERABILITY

EVENT DATE 02/21/84

REACTOR POWER ~1%



WARM-UP PERIOD

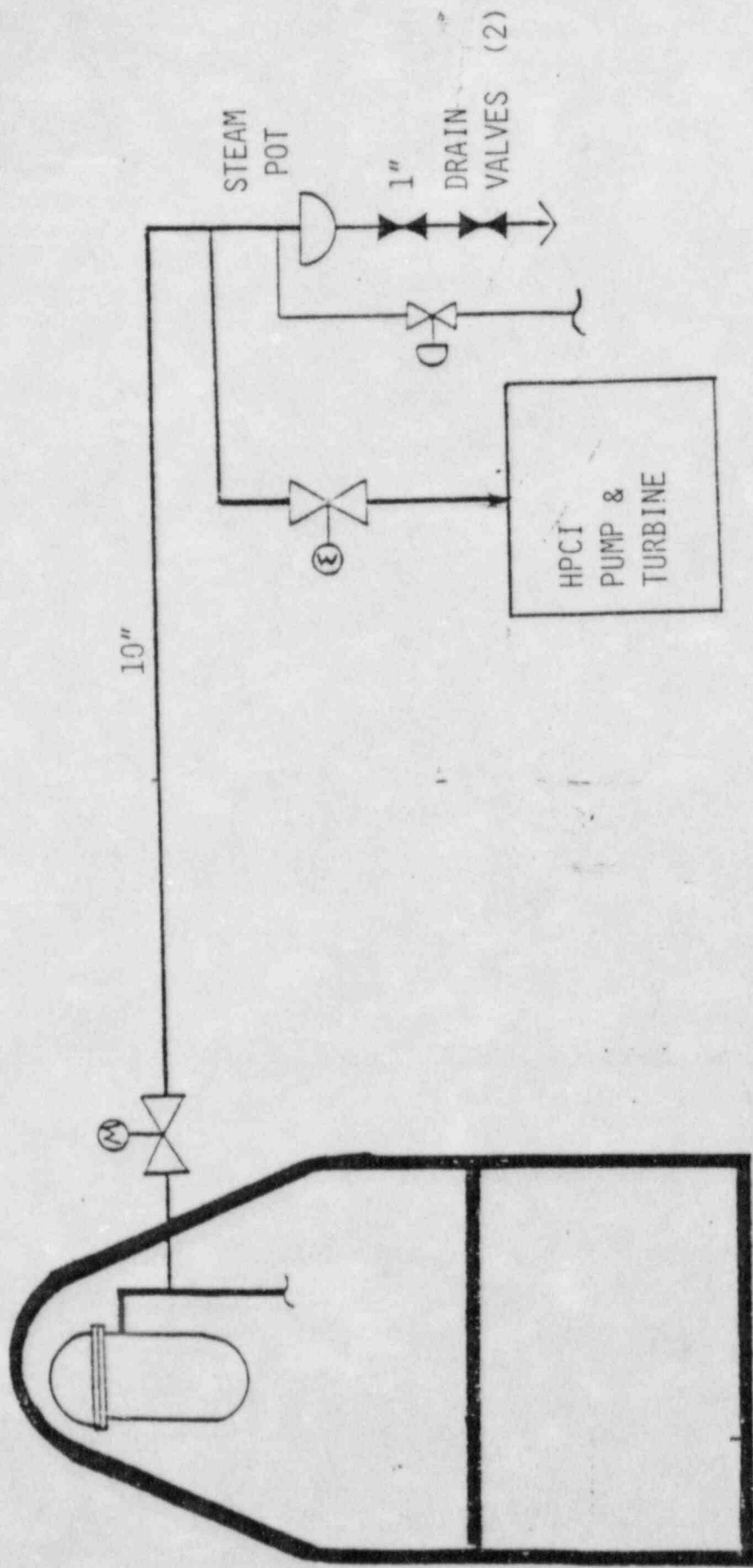
EVENTS

o HPCI - TOPAZ INVERTER OFF

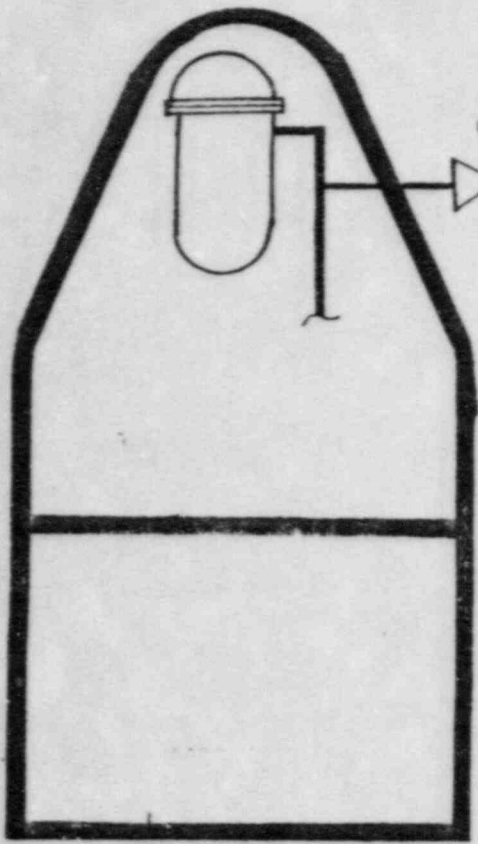
- POWER SUPPLY TO HPCI INSTRUMENTS

o RCIC - STEAM LINE DRAIN VALVES OPEN

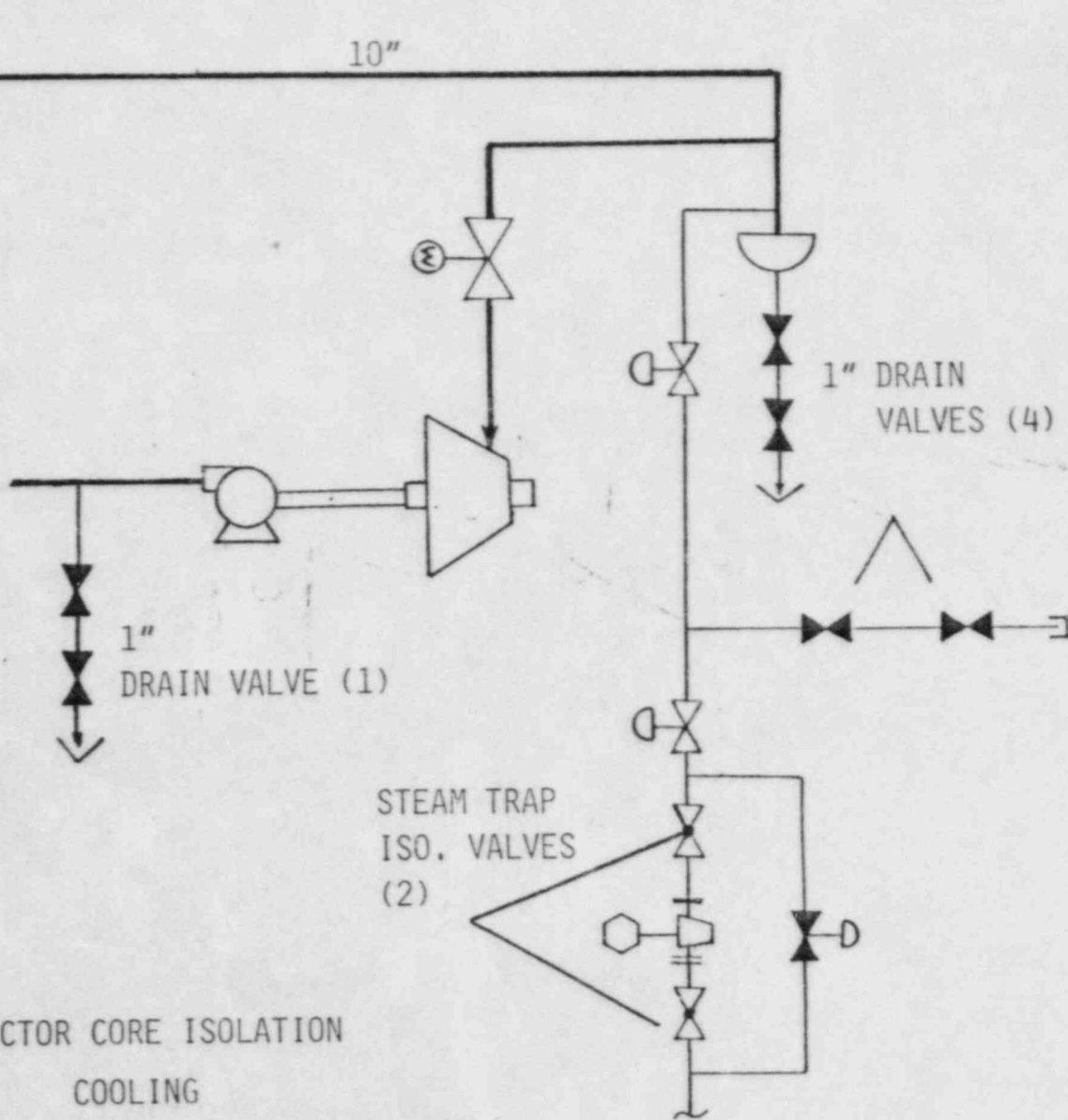
- RCIC ROOM HIGH TEMPERATURE



HIGH PRESSURE  
COOLANT INJECTION

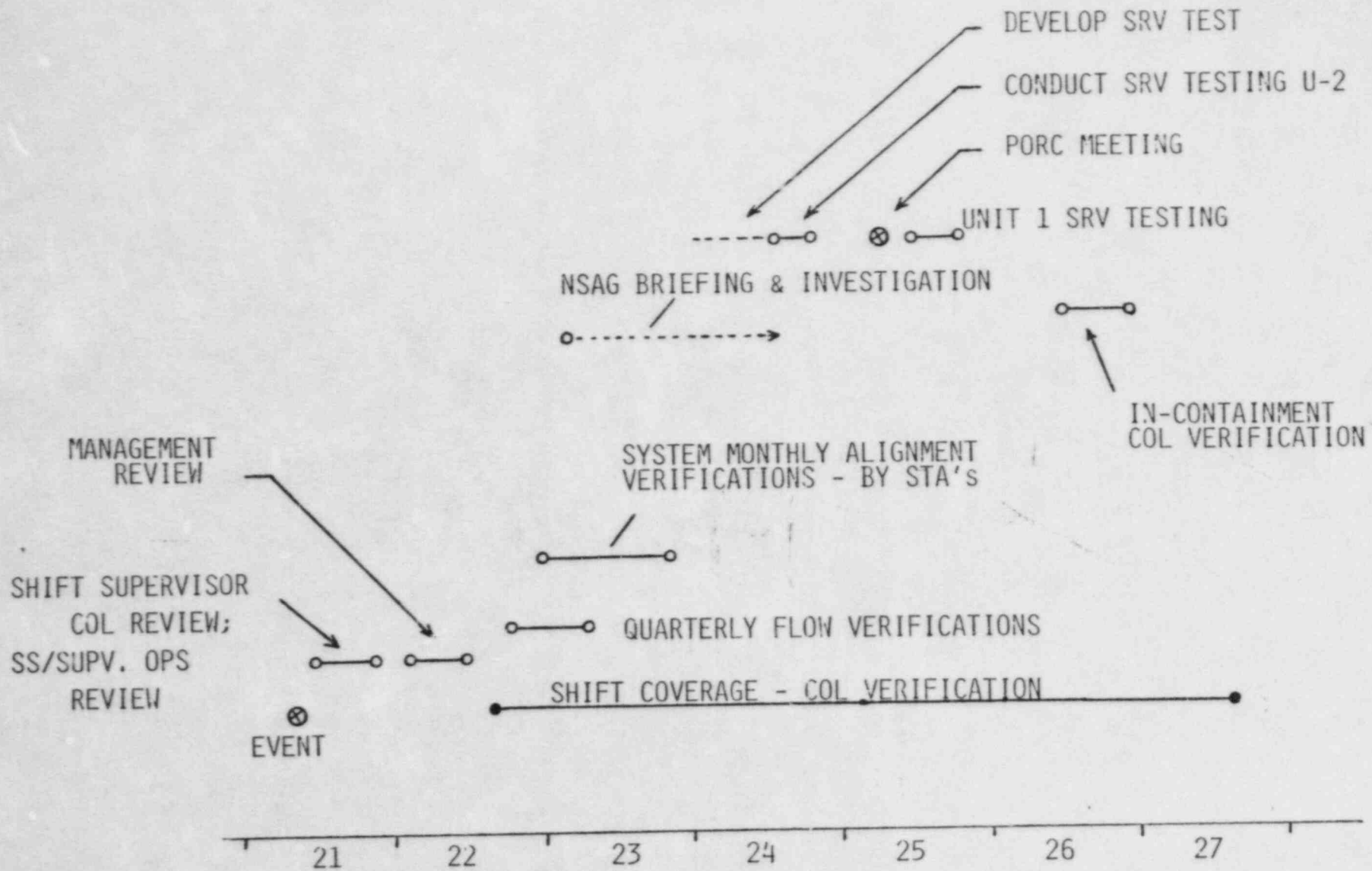


10"



REACTOR CORE ISOLATION  
COOLING





COL VERIFICATIONS

44 SAFETY/CRITICAL SYSTEM COL's  
VERIFIED BY 2/23/84

128 COL's VERIFIED BY 2/27/84

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• 425 IN-CONTAINMENT SAFETY/NON-SAFETY  
DEVICES VERIFIED

144 - SAFETY

281 - NON-SAFETY

• 5100+ DEVICES VERIFIED

• COL VERIFICATION CONTINUES

CONCLUSIONS FROM VERIFICATIONS

- VALVE DISCREPANCIES LIMITED TO HPCI/RCIC
- RANDOM CASES OF INCORRECT DEVICE LOCATION
- ISOLATED CASES OF DEVICES NOT LISTED
- SOME TYPOGRAPHICAL ERRORS

## MAJOR CORRECTIVE ACTIONS

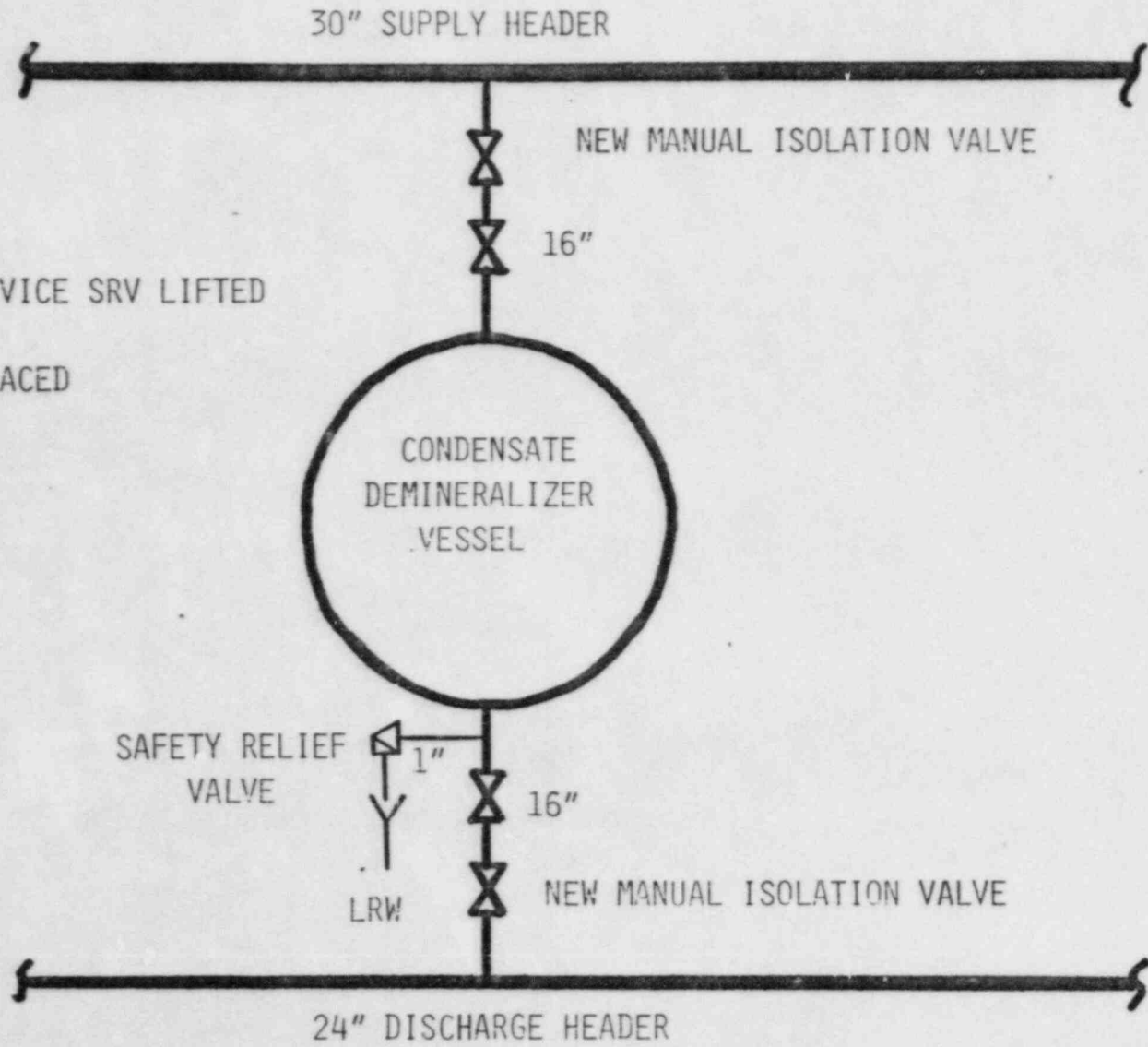
- ISSUE ADDITIONAL REQUIREMENTS RE. COL IMPLEMENTATION
- REVISE SHIFT TURNOVER PRACTICES DURING HEATUP
- CONDUCT REVIEW TO DETERMINE T.S. SPECIAL CONDITIONS
- CONDUCT TRAINING ON SPECIAL CONDITIONS
- COMPLETE REVIEW OF STARTUP INVESTIGATIONS
- COMPLETE REVIEW OF OPERATIONS IMPROVEMENT AREAS
- IMPLEMENT RECOMMENDATIONS FROM ABOVE REVIEWS
- REVIEW / REVISE STARTUP PROCEDURE
- REVISE VESSEL HYDRO PROCEDURE

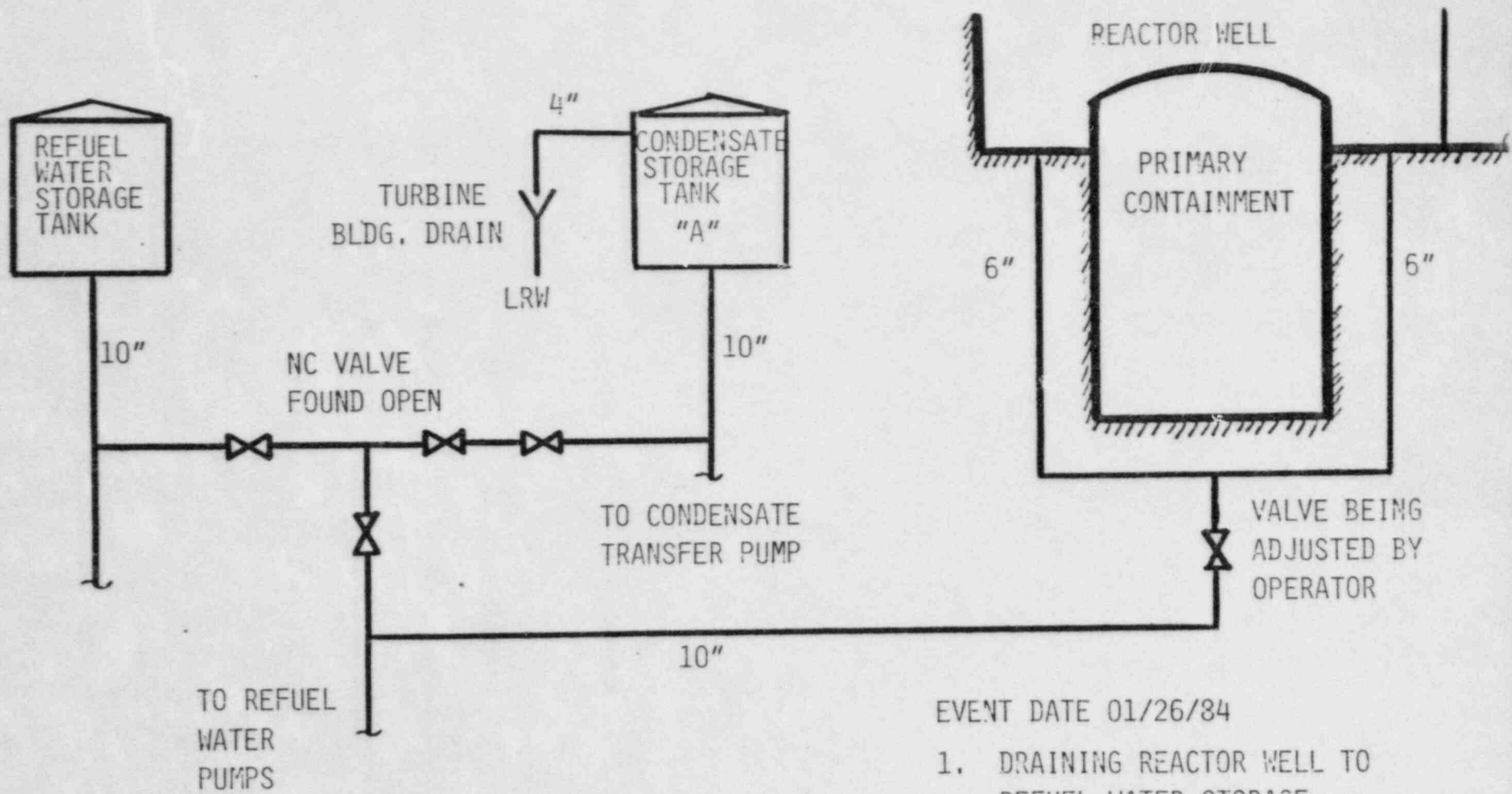
SPILL EVENTS DISCUSSED WITH REGION I

- 5 EQUIPMENT OPERATION / DESIGN PROBLEMS
- 3 VALVE LINE - UP PROBLEMS

EVENT DATE 01/26/34

1. VALVES INSTALLED
2. SRV GAGED FOR HYDRO
3. DURING RETURN TO SERVICE SRV LIFTED
4. ALL SRV'S CHECKED
5. TWO SRV SPRINGS REPLACED





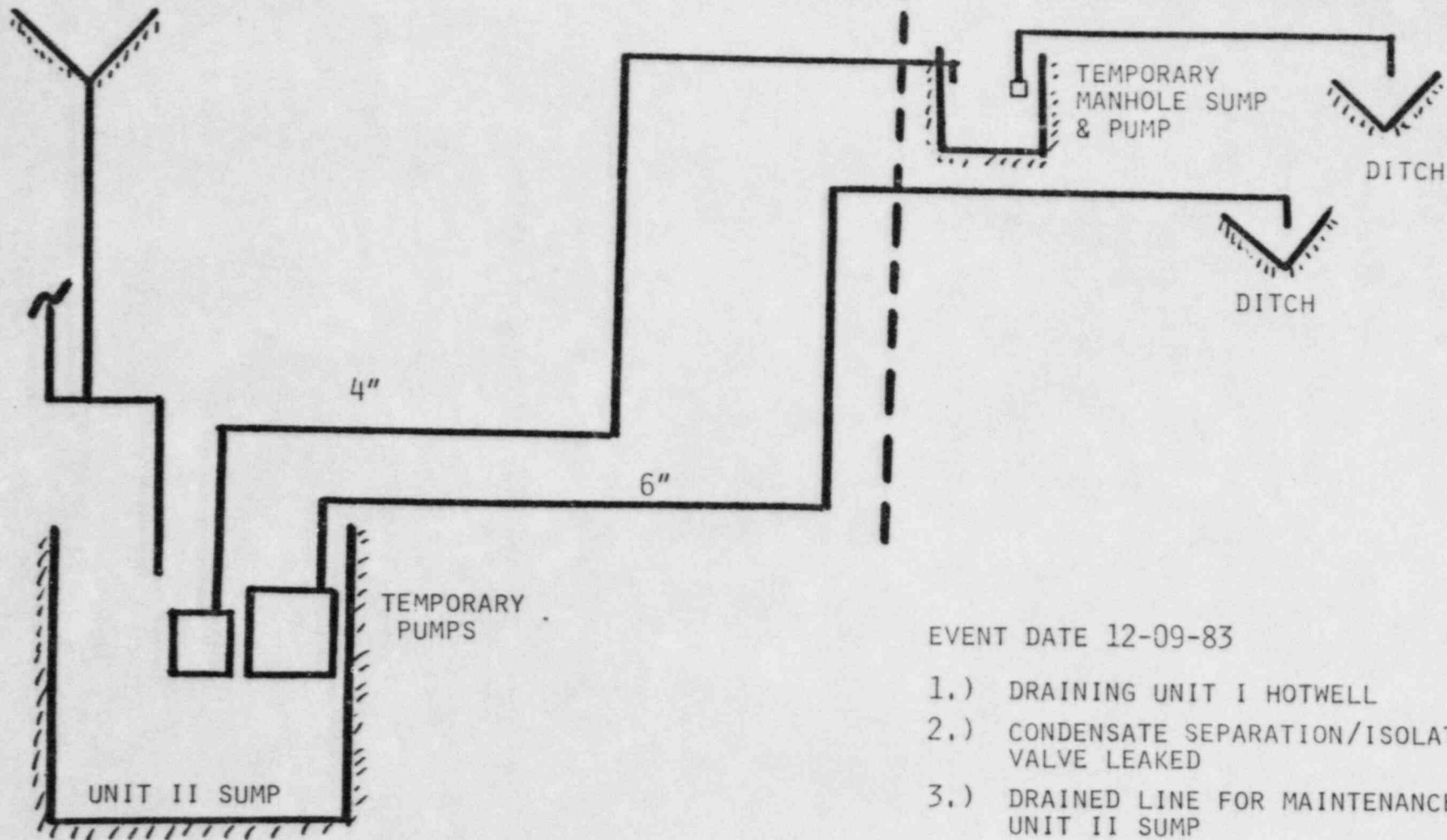
EVENT DATE 01/26/84

1. DRAINING REACTOR WELL TO REFUEL WATER STORAGE
2. VALVE LEFT OPEN FROM PREVIOUS WORK.
3. OPERATOR REALIZED THERE WAS TOO MUCH FLOW AND CLOSED VALVE
4. HIGH-LEVEL ALARM FAILED.

INSIDE

OUTSIDE

UNIT II FLOOR DRAIN

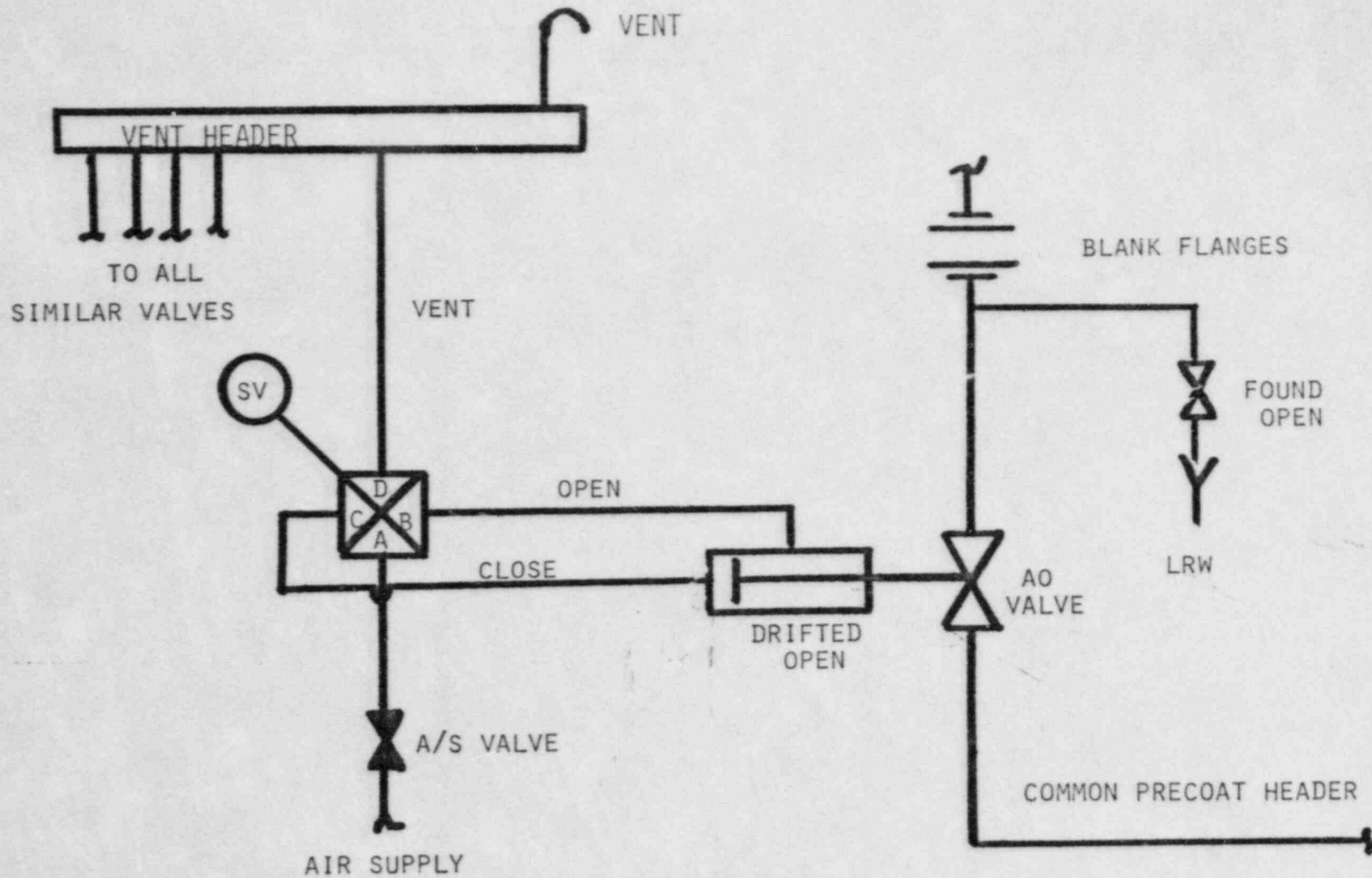


EVENT DATE 12-09-83

- 1.) DRAINING UNIT I HOTWELL
- 2.) CONDENSATE SEPARATION/ISOLATION VALVE LEAKED
- 3.) DRAINED LINE FOR MAINTENANCE TO UNIT II SUMP
- 4.) WATER PUMPED OUTSIDE AUTOMATICALLY

UNIT I - UNIT II CROSS CONTAMINATION (T-20)



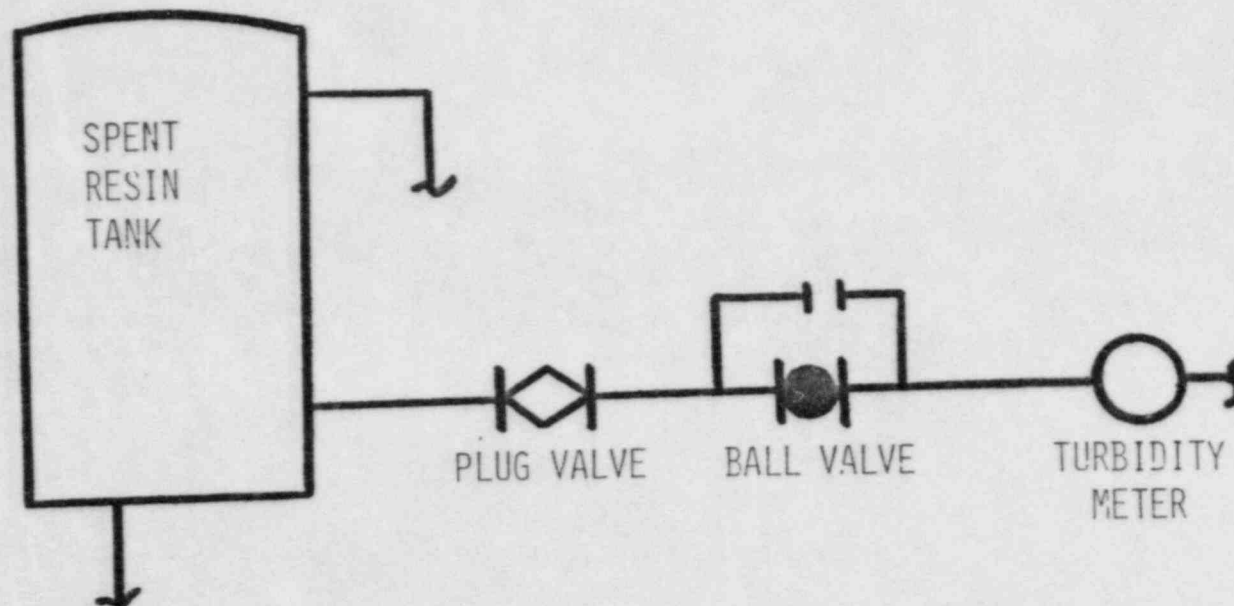


FUEL POOL CLEAN UP SYSTEM

EVENT DATE 12-09-83

- 1.) SV FAILS ~~OPEN~~ <sup>CLOSE</sup> ON LOSS OF POWER
- 2.) SV FAILS AS IS ON LOSS OF AIR
- 3.) LEAK ON SIMILAR VALVE PRESSURIZED HEADER
- 4.) AO VALVE DRIFTED OPEN

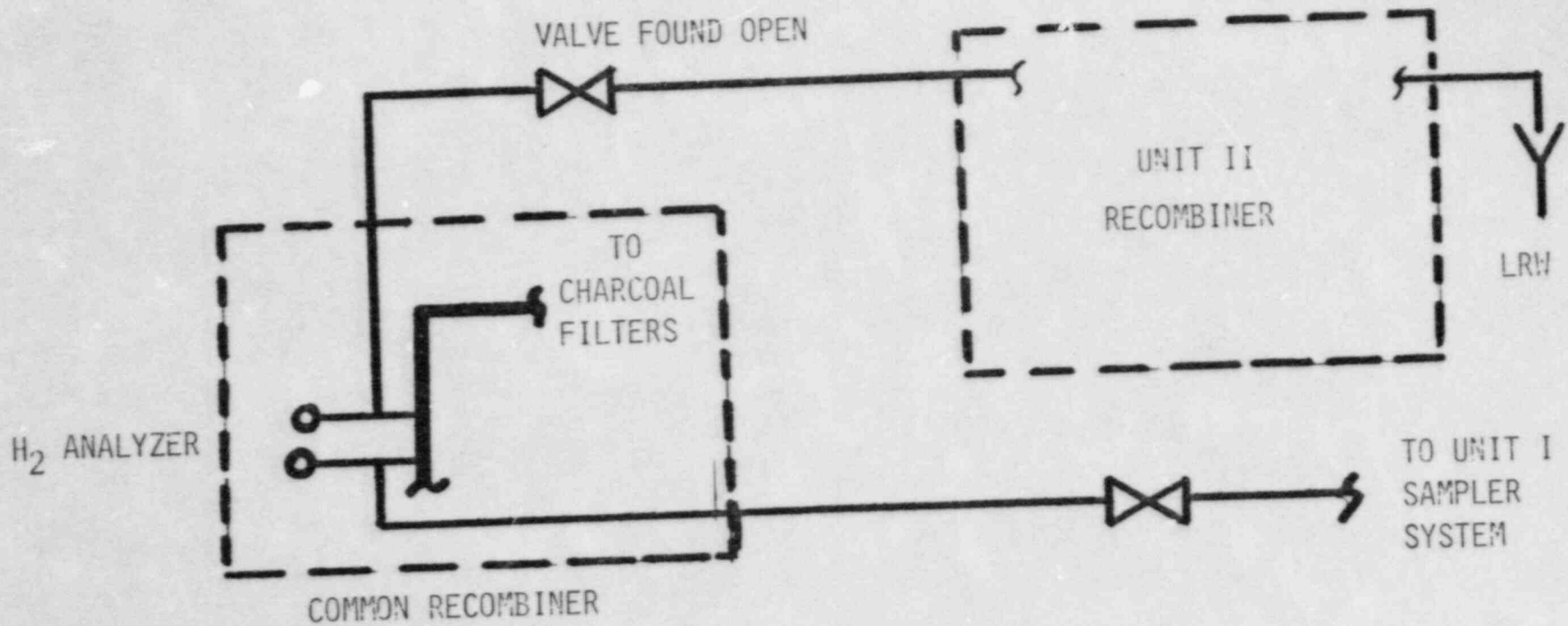
SPENT RESIN TANK



EVENT DATE: 10/13/83

- 1) DURING NORMAL OPERATION OVERPRESSURIZATION OCCURRED.
- 2) FLOW GLASS ON TURBIDITY METER BURST.
- 3) AUTO PUMP TRIP ON HIGH PRESSURE WILL BE INSTALLED.

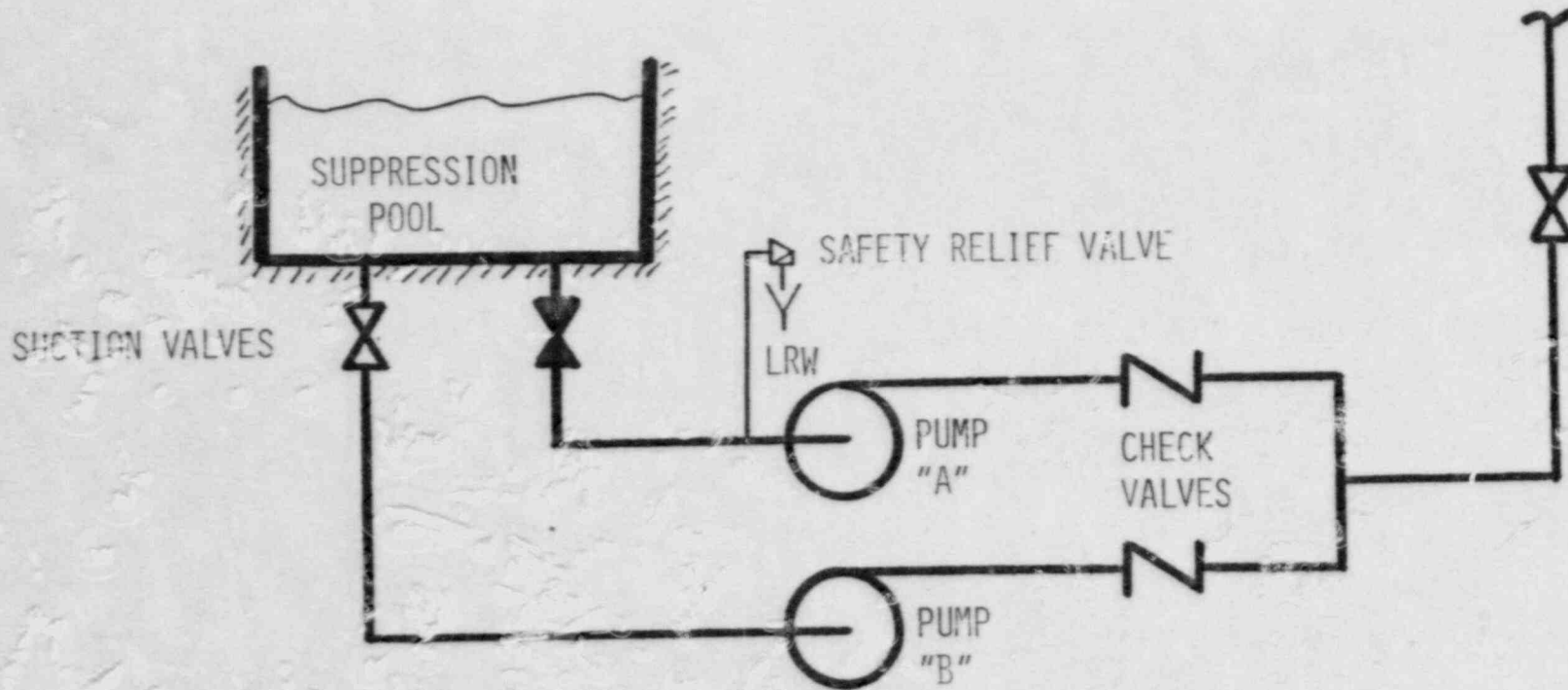
OFFGAS RECOMBINER HYDROGEN ANALYZER



EVENT DATE 03/12/83

1. OPERATOR OPENED WRONG VALVE
2. VALVE NOT LABELED
3. OPEN VALVE ALLOWED FLOW FROM UNIT I TO UNIT II

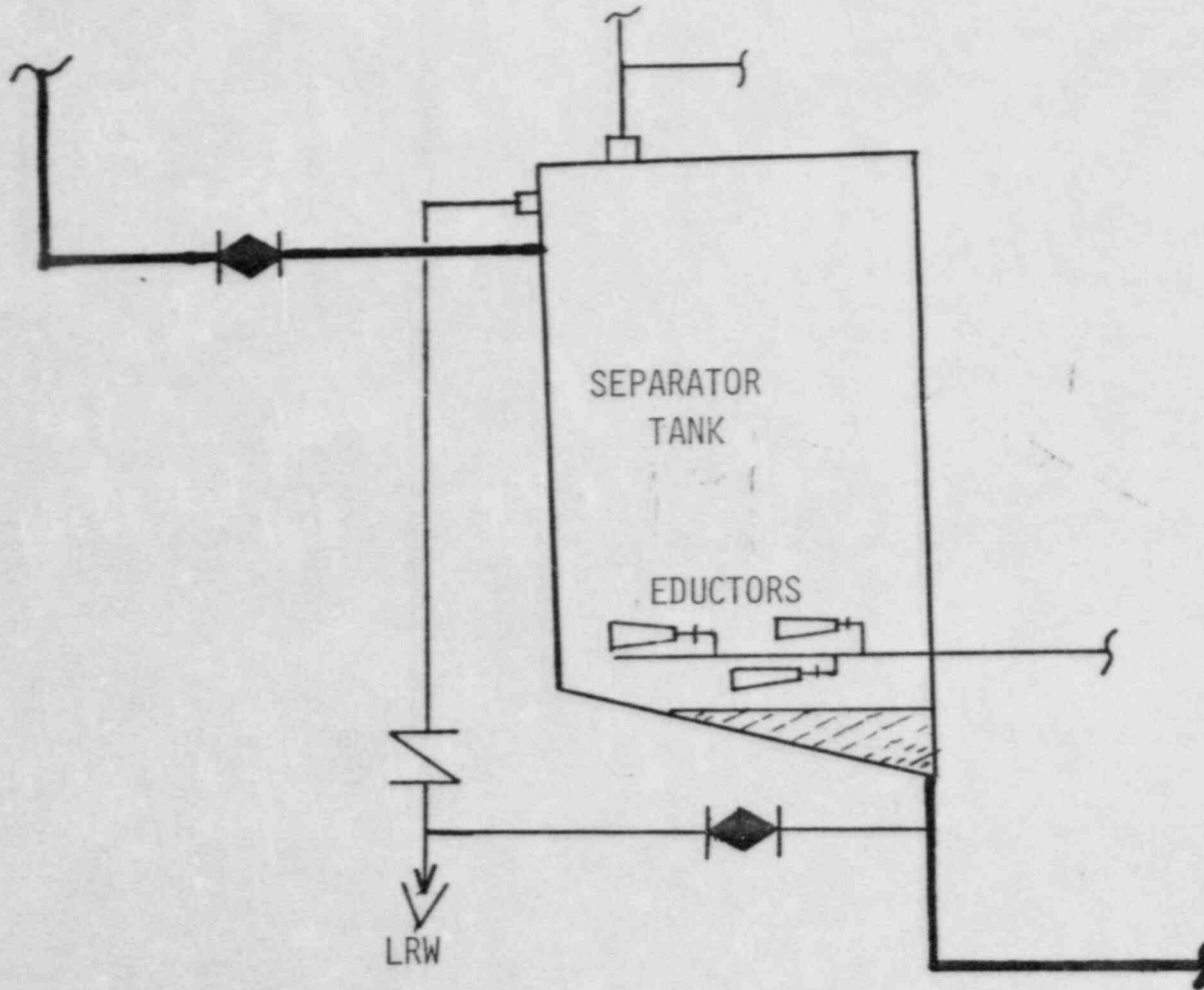
## RESIDUAL HEAT REMOVAL SYSTEM



EVENT DATE: 1/17/83

- 1) OPERATOR INCORRECTLY LEFT "A" SUCTION VALVE CLOSED.
- 2) "B" PUMP RUNNING.
- 3) "A" CHECK VALVE LEAK.
- 4) SRV OPENED.

RWCU PHASE SEPARATOR TANK OVERFLOW



- EVENT DATE 1-21-83
- 1.) RWC PUMP IN RECIRC MODE
  - 2.) HIGH LEVEL ALARM FAILED
  - 3.) OVERFLOWED TO LRW

GENERAL

- STRONG MANAGEMENT COMMITMENT
- EFFECTIVE ADMINISTRATIVE CONTROLS
- COMPETENT PERSONNEL
- SYSTEM STATUS MAINTAINED
- DEVICES CONTROLLED