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SUBJECT: Forwards addl info re inservice testing relief requests for check valve testing,consisting of addl justification,per Sept & Oct 1991 telcons.Info covers stroke testing of check valves 8924,8977 & 8981 after reassembly.

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December 11, 1991

PG&E Letter No. DCL-91-297

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Re: Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
Additional Justification for IST Relief Requests Regarding Check Valve Testing

Gentlemen:

PG&E letter DCL-91-042, dated February 27, 1991, submitted several new relief requests from the requirements of ASME Section XI. These reliefs were included in the DCPP Inservice Testing (IST) Program, Revision 8 (Unit 1) and Revision 5 (Unit 2), in February 1991. During telephone discussions in September and October 1991, the NRC Staff requested additional justification regarding valve relief requests 9, 13, 14, 18, and 21. The enclosure provides the requested information concerning (1) stroking of check valves 8924, 8977, and 8981 after reassembly, (2) justification for combining check valves 9011A&B and 9002A&B in the same disassembly inspection group, and (3) justification for not flow testing check valves 9002A&B.

Sincerely,

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ENCLOSURE

PG&E letter DCL-91-042, dated February 27, 1991, submitted several new relief requests from the requirements of ASME Section XI. These relief requests were included in the DCPP Inservice Testing (IST) Program, Revision 8 (Unit 1) and Revision 5 (Unit 2), in February 1991. The NRC Staff requested additional justification regarding valve relief requests 9, 13, 14, 18, and 21 during telephone discussions in September and October 1991. This enclosure provides the requested information concerning:

- stroking of check valves 8924, 8977, and 8981 after reassembly,
- justification for combining check valves 9011A&B and 9002A&B in the same disassembly inspection group, and
- justification for not flow testing check valves 9002A&B.

Relief requests 9, 13, 14, 18, and 21 were implemented during the Unit 1 and Unit 2 fourth refueling outages in March 1991 and September 1991, respectively. The next implementation will be during the Unit 1 and Unit 2 fifth refueling outages scheduled for September 1992 and March 1993, respectively.

Interim approval for implementation of relief requests 9, 13, and 14 was granted in NRC letter dated March 3, 1991, subject to completion of the NRC's detailed evaluation. Additional information in support of these relief requests was submitted in PG&E letter DCL-91-112, dated May 3, 1991. The relief requests are justified in accordance with 10 CFR 50.55a(a)(3)(i) because the alternative testing for detecting degradation provides an acceptable level of quality and safety.

Relief requests 18 and 21 were pre-approved for implementation by PG&E in letter DCL-91-042, because the alternative testing for detecting degradation is consistent with NRC Generic Letter 89-04. The relief requests are justified in accordance with 10 CFR 50.55(a)(3)(ii) because compliance with the requirements of ASME Section XI results in hardship and unusual difficulties without a compensating increase in the level of quality and safety.

RR #9, 13, 14: Stroking of Valves 8924, 8977, and 8981 Following Reassembly

Relief requests 9, 13, and 14 document PG&E's basis for disassembly inspections of safety injection (SI) system check valves 8924, 8977, and 8981 each refueling outage to verify their capability to open and close. Instead of part-stroking the valves after reassembly as stated in the relief requests, PG&E will full-stroke the valves following reassembly, as requested by the NRC Staff in phone discussions. Relief requests 9, 13, and 14 will be formally revised to require full-stroking and will be submitted in the next revision to the IST Program Plan.

RR #18, 21: Justification for Similar Grouping of Valves 9011A&B and 9002A&B

Relief request 18 documents PG&E's basis for disassembly inspections of containment spray (CS) system check valves 9011A&B to verify their capability to open and close. Relief request 21 documents PG&E's basis for disassembly inspections of CS system check valves 9002A&B to verify their capability to open.

As an alternative to ASME Section XI testing requirements as stated in relief requests 18 and 21, valves 9002A&B and 9011A&B are inspected on a rotational refueling outage frequency, one valve each outage. If any degradation is detected that interferes with the operability of the valves, then the remaining valves in this group are disassembled and inspected during the same outage.

The NRC Staff requested in phone discussions that PG&E clarify the basis for combining these four check valves in the same disassembly inspection group. As described below, the four valves are grouped together because of their similarities in safety function, design, and service conditions. There are no known differences in valve degradation mechanisms. Therefore, disassembly inspection of one valve each refueling outage provides sufficient assurance that degradation in any valve will be detected.

1. Safety Function:

   Valves 9011A&B are inside containment isolation valves for the CS line penetrations. Valves 9011A&B are relied on to open to permit full flow during containment spray following a LOCA, and to close to perform a containment isolation function.

   Valves 9002A&B are the CS pump discharge check valves. Similarly to valves 9011A&B, valves 9002A&B are relied on to open to permit full flow during containment spray following a LOCA. They are not relied on to close because the DCPP Emergency Operating Procedures (EOPs) take credit for operator action to ensure that the refueling water storage tank (RWST) is isolated from reactor coolant during post-LOCA recirculation.

   Because valves 9011A&B perform a containment isolation function, they are local leak-rate tested (LLRT) in accordance with 10 CFR 50 Appendix J to ensure their leak-tightness. Routine LLRTs do not disturb the as-found condition of valves 9011A&B. LLRTs will not cause degradation of valves 9011A&B because of the small pressure applied to the disc (i.e., 50 psi) and the use of dry air for testing. Therefore, even though valves 9011A&B are tested more frequently than valves 9002A&B, there are no known degradation mechanisms for valves 9011A&B that would not also affect valves 9002A&B.

   Should a check valve fail a LLRT and subsequent corrective maintenance identify a condition which could affect the valve's safety function to open or close, it is PG&E's practice under the nonconformance process to disassemble and inspect similar check valves.

2. Design:

   The valves are of the same manufacturer, size, model number, and materials of construction.

3. Service Conditions:

   a. The valves are normally closed.

   b. The valves are physically oriented in the horizontal position.

   c. The valves are maintained in essentially dry pipe. Inside containment, drain holes are being located in the section of pipe next to valves 9011A&B to ensure they are maintained dry. The section of piping which contains valves 9002A&B is routinely monitored for the presence of water to ensure they are maintained essentially dry.

   d. Valves 9002A&B are located in the auxiliary building and valves 9011A&B are located inside containment. The relatively small variation in temperature would have no significant effect on the degradation mechanisms of the valves. The pressure differential that these valves experience during normal operation is essentially identical since they are installed in the same line.

Relief requests 18 and 21 will be formally revised and submitted in the next revision to the IST Program Plan, clarifying the basis for combining these four check valves in the same disassembly inspection group, as described above.

RR #21: Justification For Not Flow Testing Valves 9002A&B

Relief request 21 documents PG&E's basis for disassembly inspections of CS system check valves 9002A&B to verify their capability to open. The basis for this alternate testing is that (a) the valves cannot be exercised during power operation since the system alignment for testing would require containment entry to manually isolate the containment spray headers for testing and (b) it is impractical to test the valves during shutdowns as the flow path through these valves disables one train of residual heat removal (RHR).

The NRC Staff requested in phone discussions that PG&E provide additional basis to justify not flow testing the valves.

The RHR/CS system valve alignments during normal shutdown are shown in Figure 1. Prior to the Unit 1 fourth refueling outage in March 1991, shutdown testing had been accomplished by implementing the RHR/CS system valve alignment shown in Figure 2. As reflected in Figure 2, in order to partial or full-flow stroke valves 9002A or 9002B during shutdown, the associated CS pump must discharge to the reactor vessel through the RHR system, in accordance with the following instructions:

1. Separate the discharge flow paths for the RHR system by closing motor-operated valves (MOVs) 8716A or 8716B.

Note: During operating modes 1 through 3, this action is considered to disable both RHR trains as it prevents a single RHR pump from discharging to all four RCS cold legs (reference IE Information Notice 87-01, "RHR Valve Misalignment Causes Degradation of ECCS in PWRs").

2. Manually isolate valve 9006A or 9006B, containment spray to the spray rings.

3. Align the associated CS pump to discharge into the RCS through one of the RHR flow paths. In aligning CS to RHR, the associated RHR pump must be secured. MOVs 9003A or 9003B (RHR to CS during recirculation phase) must have their protective interlocks jumpered in order for the MOV to be opened.

4. Divert a portion of the operating RHR pump flow from the RCS to the RWST, by manual throttling of gate valve 8741, to control RCS volume when the CS pump is discharging into the reactor vessel.

PG&E believes that testing valves 9002A&B in the shutdown configuration shown in Figure 2 places the RHR system in a degraded and precarious operating configuration. This shutdown test configuration is highly undesirable for the plant operating staff because of the operating difficulties and potential consequences described below:

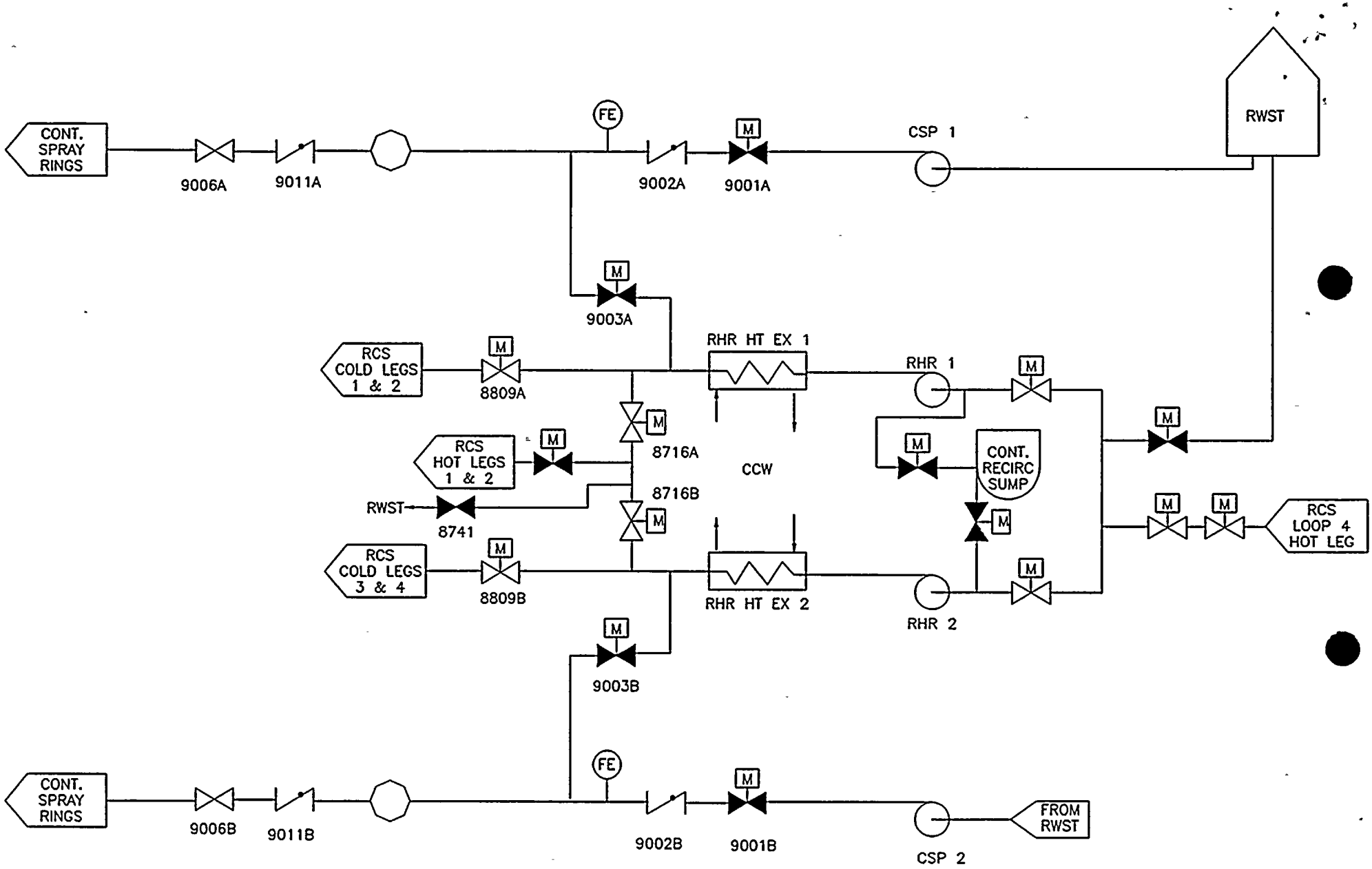
1. If manual isolation valve 9006A or 9006B (from the CS pump to the spray rings) is not fully closed, inadvertent spraying of containment may result that would not be detected until water is emitted from the containment spray nozzles.

2. Because the diversion of water from RHR to the RWST is accomplished by manual manipulations of gate valve 8741 outside of the control room, RCS volume control is extremely difficult and could potentially lead to inadequate RHR flow to the RCS.

3. The problems in controlling RCS volume may lead to an overfilling of the reactor vessel or refueling cavity, spreading radioactive contamination within the containment and potentially damaging plant equipment.

Because valves 9002A&B are located in essentially dry pipe and are not subject to cycling during plant operation, potential degradation mechanisms are minimal. Therefore, testing valves 9002A&B with flow (either partial or full) results in hardship and unusual difficulties as described above without a compensating increase in the level of quality and safety. Relief request 21 will be formally revised and submitted in the next revision to the IST Program Plan, providing additional justification for not flow testing valves 9002A&B, as described above.

PG&E is currently investigating alternative methods to the Figure 2 testing configuration to allow partial or full-flow stroking of valves 9002A&B during shutdown. If valve stroking by flow is determined to be possible, PG&E will revise appropriate test procedures and submit a revised IST Program Plan.



GRAPHICS:MISC\9002A1

FIGURE 1

NORMAL SHUTDOWN RHR/CONT. SPRAY CONFIGURATION

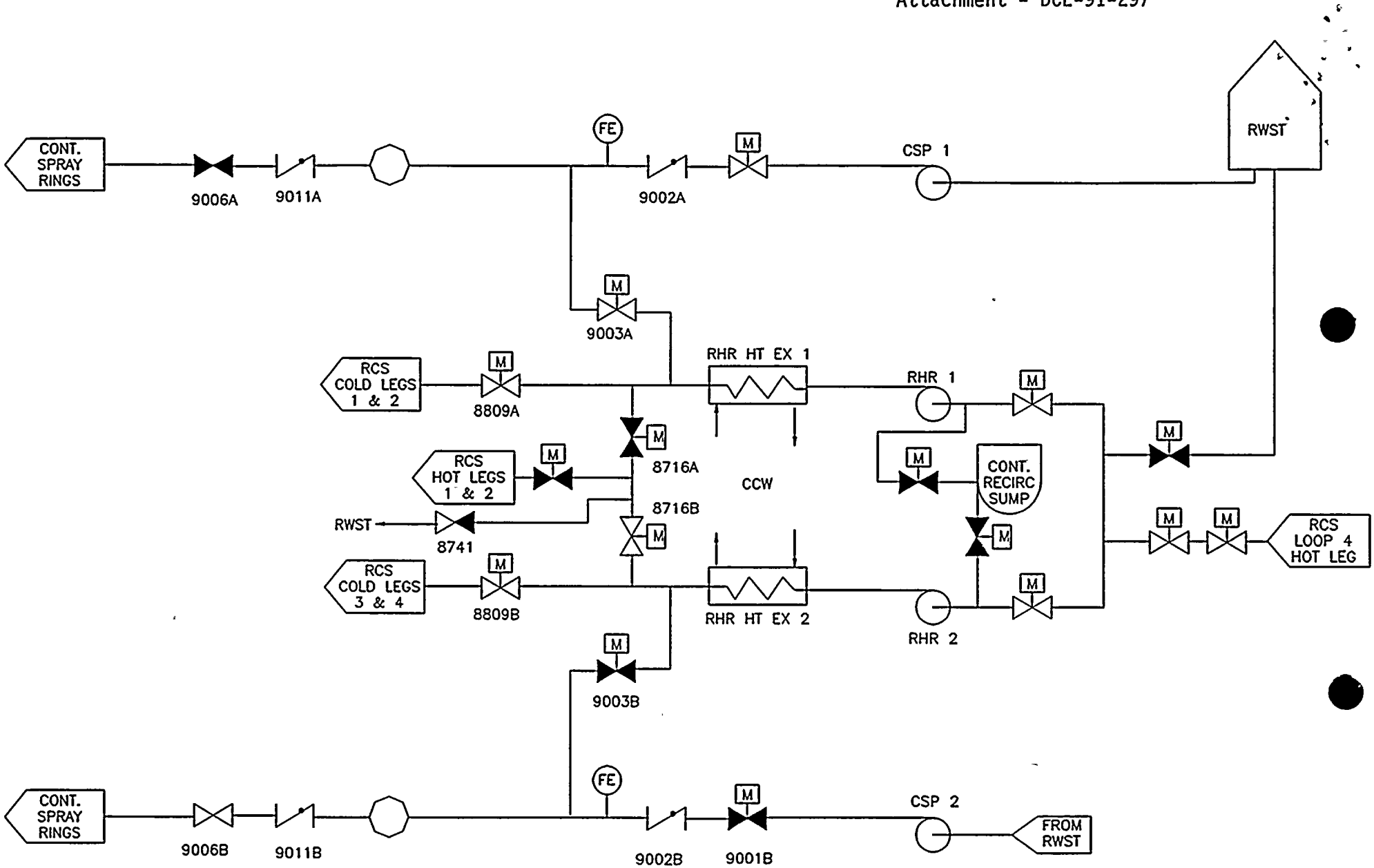


FIGURE 2

RHR/CONT. SPRAY CONFIGURATION DURING TESTING OF 9002A