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 FACIL: 50-275 Diablo Canyon Nuclear Power Plant, Unit 1, Pacific Gas & Electric Co.  
 50-323 Diablo Canyon Nuclear Power Plant, Unit 2, Pacific Gas & Electric Co.  
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 RECIP. NAME: MIRAGLIA, F.J.  
 RECIPIENT AFFILIATION: Licensing Branch 3

SUBJECT: Response to Item II.B.1 of NUREG-0737, "RCS Vents." Head vent sys will be installed at facility. Sys design purchased from Westinghouse Head vent will remove non-condensable gases from hot & cold leg RCS piping.

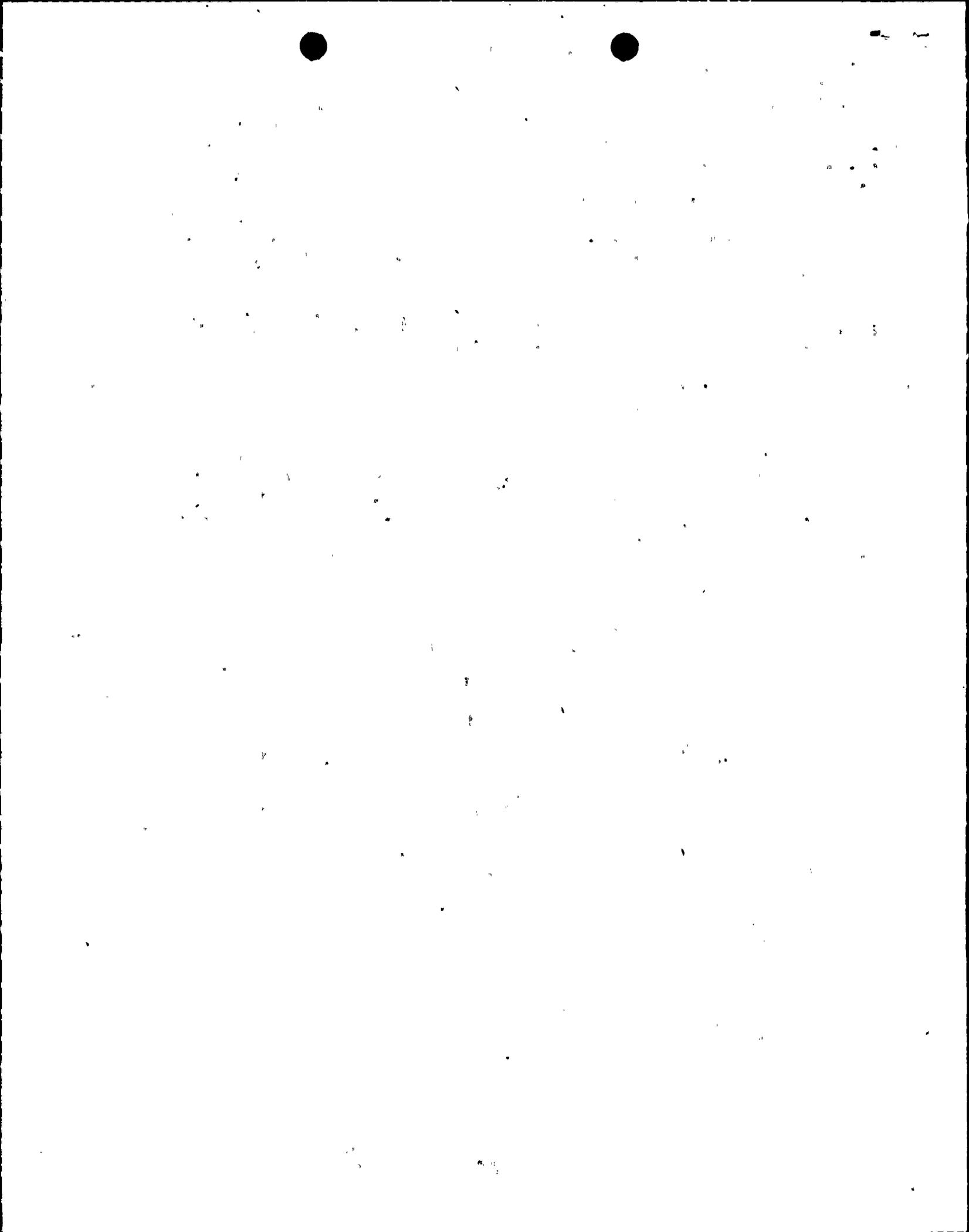
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February 11, 1981

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Mr. Frank J. Miraglia, Jr., Chief  
Licensing Branch No. 3  
Division of Licensing  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555

Re: Docket No. 50-275  
Docket No. 50-323  
Diablo Canyon Units 1 and 2

Subject: PGandE's Response to Item II.B.1 of NUREG-0737 "Reactor Coolant System Vents"

Dear Mr. Miraglia:

Enclosed are 40 copies of PGandE's response to Item II.B.1 of NUREG-0737 "Reactor Coolant System Vents."

Advance copies of this submittal have been sent by courier to Mr. Bart Buckley.

Kindly acknowledge receipt of the above material on the enclosed copy of this letter and return it to me in the enclosed addressed envelope.

Very truly yours,

*Philip A. Crane, Jr.*

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A head vent system meeting the requirements described below will be installed at Diablo Canyon. The system design is being purchased from the nuclear steam supply system manufacturer, Westinghouse.

The head vent system will use four one-inch electrically operated valves meeting the requirements of IEEE-323-74 and IEEE-344-75 installed in a series-parallel arrangement satisfying the single failure criterion. These valves will be operated from and have position indication in the control room. They will fail closed. A flow diagram showing the arrangement schematically is attached. A three-eighths inch diameter orifice will be installed in each of the parallel vent lines. The new valves, orifices, and connecting piping will be supported from the head lifting structure and will be qualified seismically for this location. Instrumentation and control will meet the requirements of IEEE-279.

The orifices in the vent lines would restrict the flow through a postulated break in the new vent system to that which normal makeup can maintain. This would preclude the possibility of the occurrence of a small break loss of coolant accident in the head vent system. (A rupture in the existing manual head vent line is covered by the small break LOCA discussion in Chapter 15 of the FSAR and by Westinghouse WCAP-9600 on the same subject which has been submitted to the NRC staff by Westinghouse.)

In a Westinghouse reactor coolant system, the head vent will also serve to remove non-condensable gases from the hot leg and cold leg reactor coolant system piping. Should the existence of non-condensable gases in the tubes of a steam generator be suspected, we would "bump" the related reactor coolant pump to move the gases to the reactor vessel, where the gases may be removed by the head vent system.

Equipment and piping for Reactor Coolant System venting will be installed by February 1, 1981. Procedures and operator training will be completed following NRC approval of the forthcoming Westinghouse Owners Group guidelines.

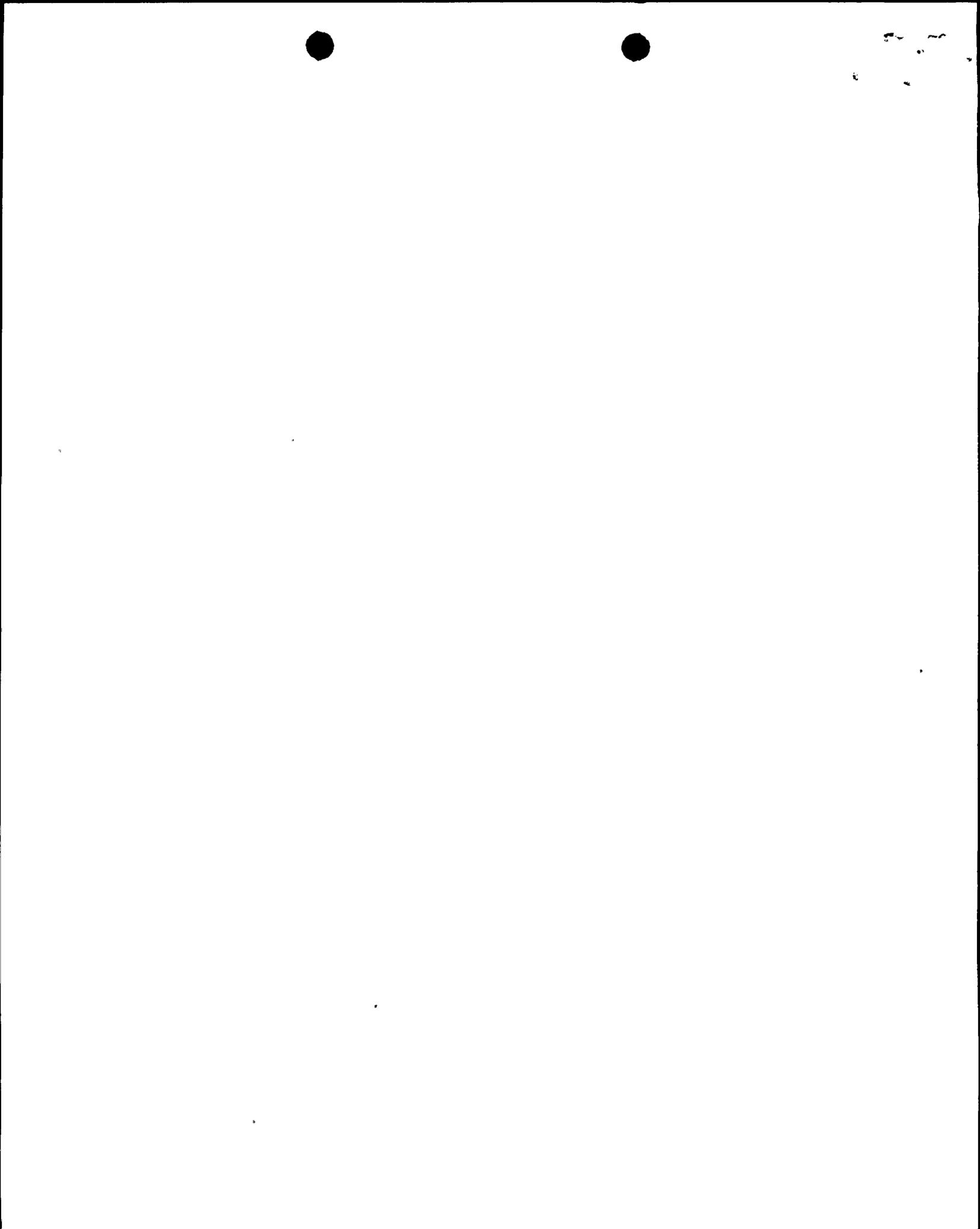
Preliminary calculations confirm that a gas volume greater than one-half the reactor coolant system volume could be vented by either train in less than one hour. On the other hand, the procedure will call for venting to be terminated before the hydrogen concentration in the containment could exceed 4% under the most adverse assumptions. Venting would not be continued until the actual containment hydrogen concentration achieved had been determined.

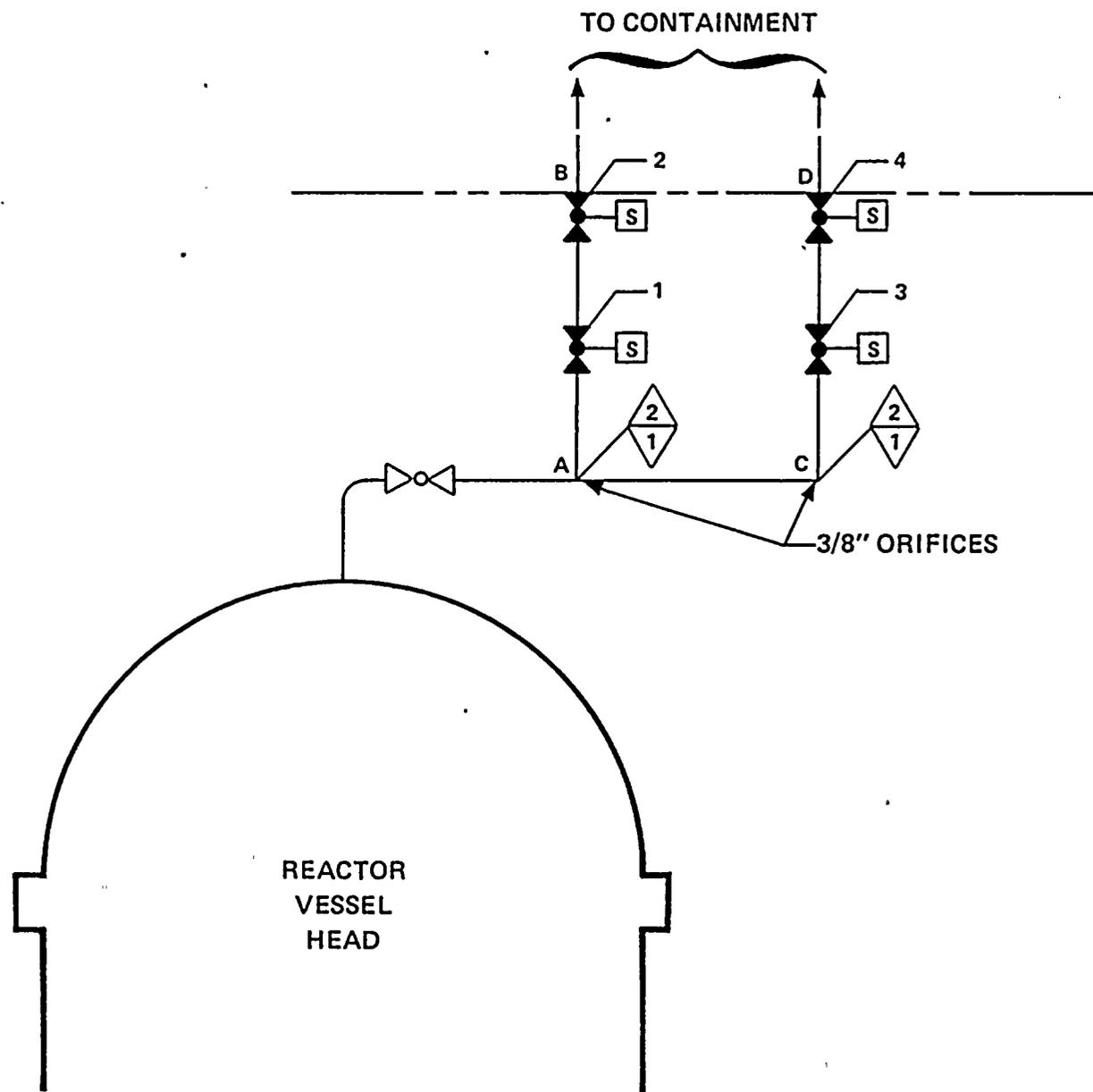
The head vent system described would vent into the area immediately surrounding the reactor vessel head. This area is swept by ventilating air flow and gases released would be mixed into the containment volume by this air flow.

Consideration has been given to piping the vented gases to other locations, such as the pressurizer relief tank. At this time an alternate vent release location has been identified or evaluated. However, should an alternate location be required in the future, an extension of the described system could be added.

Inadvertent opening of the head vent system would be detected by the valve position lights in the control room and by the leakage monitoring system which is described in Section 5.2.4 of the FSAR.

Venting of the pressurizer, should that be necessary, can be carried out by the use of the pressurizer power operated relief valves, which at Diablo Canyon are seismically qualified and have qualified control circuits.





FLOW DIAGRAM OF THE REACTOR VESSEL HEAD VENT SYSTEM



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