LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
DIABLO CANYON UNIT 1	0 5 0 0 0 2 7 5	1 OF 9

TITLE (4) CONTROL ROOM TEMPERATURE LIMIT POTENTIALLY EXCEEDED DURING DESIGN BASIS ACCIDENT CONDITIONS

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MON	DAY	YR	YR	SEQUENTIAL NUMBER	REVISION NUMBER	MON	DAY	YR	FACILITY NAMES	DOCKET NUMBER (8)
08	28	92	92	- 0 2 0 -	0 1	04	28	93	DIABLO CANYON UNIT 2	0 5 0 0 0 3 2 3
										0 5 0 0 0

OPERATING MODE (9)	1
POWER LEVEL (10)	0 9 5

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (11)

X 10 CFR VOLUNTARY

OTHER -

(Specify in Abstract below and in text, NRC Form 366A)

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER	
	AREA CODE	
DAVID P. SISK, SENIOR REGULATORY COMPLIANCE ENGINEER	805	545-4420

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
| | YES (if yes, complete EXPECTED SUBMISSION DATE)	| X | NO				

ABSTRACT (16)

This revision is submitted for information purposes only as described in Item 19 of Supplement 1 to NUREG-1022.

On August 28, 1992, at 1100 PDT, with Units 1 and 2 in Mode 1 (Power Operation), PG&E initially determined that operation of the control room ventilation system (CRVS) in accordance with Technical Specification (TS) 3.7.5.1 did not meet the CRVS design basis under some circumstances. With minimum equipment allowed by TS 3.7.5.1, an assumed CRVS single failure would result in one sub-train operation. Preliminary heatup calculations indicated that the CRVS cooling function might not be satisfied by operation of only one sub-train.

On August 28, 1992, at 1204 PDT, PG&E made a four-hour, non-emergency report in accordance with 10 CFR 50.72 (b)(2)(iii)(D).

However, subsequent final calculation results show that acceptable temperatures of the control room and solid state protection system rooms would be maintained with minimum CRVS equipment in operation as allowed by TS 3.7.5.1 and that the CRVS design basis has continued to be met.

I. Plant Conditions

Units 1 and 2 have operated in various Modes and at various power levels with the condition described below.

II. Description of Event

A. Summary:

On August 28, 1992, at 1100 PDT, with Units 1 and 2 in Mode 1 (Power Operation), PG&E initially determined that operation of the control room ventilation system (CRVS)(VI) in accordance with Technical Specification (TS) 3.7.5.1 did not meet the CRVS design basis under some circumstances. With one of the redundant supply fans (FAN)(VI) or the associated air conditioning equipment (CHU)(VI) in the CRVS sub-trains out of service, as allowed under TS 3.7.5.1, an assumed CRVS single failure would result in one sub-train operation. One sub-train operation could potentially impair the ability of the CRVS to maintain the temperature of the control room (NA) and the solid state protection system (SSPS) (JG) cabinet room within TS surveillance limits.

On August 28, 1992, at 1204 PDT, PG&E made a four-hour, non-emergency report in accordance with 10 CFR 50.72 (b)(2)(iii)(D).

However, subsequent final calculation results show that acceptable control room and SSPS rooms temperature would be maintained with minimum CRVS equipment in operation as allowed by TS 3.7.5.1 and that the CRVS design basis has continued to be met.

B. Background:

TS 3.7.5.1 requires that the CRVS be operable with two separate trains, with each train consisting of one main supply fan, one filter booster fan, one pressurization supply fan, and one HEPA filter (VI)(FLT) and charcoal adsorber system (VI)(ADS) (see Figure 1). The Action Statement for TS 3.7.5.1 requires that, with one control room ventilation system train inoperable, the inoperable train must be restored to operable status within 7 days or be in at least Mode 3 (Hot Standby) within the next 6 hours and in Mode 5 (Cold Shutdown) within the following 30 hours.

The CRVS is designed to provide cooling/heating and air circulation to the common control room, the Units 1 and 2 SSPS cabinet rooms, and the nonsafety-related computer rooms (see Figure 2). Supply of proper ventilation is a safety-related function to maintain the subject equipment within its design temperature operating range and to maintain habitability for control room personnel. The Units 1 and 2 CRVS trains are each comprised of two component sub-trains. The

distribution ducts and filters of each Unit train are common to both sub-trains of that Unit.

The CRVS design provides for operation of one component sub-train at a time for each Unit. One component sub-train is functionally equivalent to one train as defined by the TS. Therefore, the CRVS satisfies the TS operability requirement by having one component sub-train operable in each unit. The term "sub-train" will be used in the LER text with the understanding that a sub-train is equivalent to a "train" as defined in TS 3.7.5.1.

The ventilation of the common control room is supplied by a sub-train from Unit 1 and a sub-train from Unit 2. Each unit-specific sub-train supplies the corresponding unit's computer and SSPS rooms. Each sub-train has a supply fan and associated air conditioning equipment.

C. Event Description:

As part of the Diablo Canyon Configuration Management Program described in PG&E letter DCL-89-099, dated April 19, 1989, the TS are continuing to be reviewed to ensure compatibility with design basis documents.

On August 28, 1992, as part of this review, a preliminary evaluation of the design and the TS requirements by Engineering and Plant Operations concluded that for the minimum CRVS configuration specified by the TS, in the event of an accident and a single active failure, only one unit's CRVS sub-train may be operating.

For the case of only one sub-train in operation, a preliminary calculation based on conservative heat load assumptions was performed to determine control room temperature characteristics. These heat load calculations indicated that the cooling capacity of one CRVS sub-train might not be sufficient to maintain the control room and SSPS room temperatures below the TS 4.7.5.1 surveillance control room temperature limit of 120°F.

Therefore, PG&E initially believed the plant had operated outside its design basis. On August 28, 1992, at 1204 PDT, PG&E conservatively made a four-hour, non-emergency report in accordance with 10 CFR 50.72(b)(2)(iii)(D).

Subsequently, the final calculation results using actual equipment heat releases as documented in the equipment design documents showed that the temperature of the control room and the two SSPS rooms would not exceed TS limits in the event of one CRVS sub-train operating. Consequently, plant operation was not outside the design basis.

D. Inoperable Structures, Components, or Systems that Contributed to the Event:

None.

E. Dates and Approximate Times for Major Occurrences:

1. August 28, 1992; 1100 PDT: Event/Discovery date. The CRVS was determined to require Action Statement entry when a component in a sub-train is out of service.

2. August 28, 1992; 1204 PDT: A four-hour, non-emergency report was made to the NRC in accordance with 10 CFR 50.72(b)(2)(iii)(D).

3. September 28, 1992: This event was reported under LER 1-92-020-00 (PG&E Letter No. DCL-92-206).

4. March 5, 1993: Final calculation results demonstrate the plant would not exceed control room and SSPS rooms temperature limits during design basis accident conditions.

F. Other Systems or Secondary Functions Affected:

None.

G. Method of Discovery:

As part of the Diablo Canyon Configuration Management Program described in PG&E letter DCL-89-099, dated April 19, 1989, the TS are being reviewed to ensure compatibility with design basis documents.

On August 28, 1992, as part of this review, a preliminary evaluation of the design and the TS requirements by Engineering and Plant Operations concluded that for the minimum CRVS configuration specified by the TS, in the event of an accident and a single active failure, only one CRVS sub-train may be operating, whereas the preliminary room temperature calculation indicated that operation of one sub-train from each unit was required to operate to satisfy the temperature design basis.

On March 5, 1993, PG&E review of the final room temperature calculation using actual equipment heat releases as documented in the equipment design documents showed that the temperature of the control room and the two SSPS rooms would not exceed TS limits in the event of one CRVS sub-train operating. Consequently, plant operation was not outside the design basis.

H. Operator Actions:

None.

I. Safety System Responses:

None.

III. Cause of the Event

A. Immediate Cause:

Revision 0 of this LER identified the immediate cause of this event to be that TS 3.7.5.1 did not require entry into a 7-day action statement when a redundant sub-train component of the CRVS system was taken out of service.

However, the subsequent room temperature calculation reviewed on March 5, 1993, used updated heat loads and showed that the room temperatures would not exceed TS limits.

B. Root Cause:

Revision 0 of this LER identified the root cause of this event to be inadequate understanding of CRVS design basis information used to develop TS 3.7.5.1.

However, final calculation results showed that operation of one CRVS sub-train is sufficient to maintain acceptable temperatures in the control and SSPS rooms.

IV. Analysis of the Event

In accordance with TS 3.7.5.1, two separate CRVS trains are required to be operable. The normal operating equipment configuration to provide ventilation for the control room and the two SSPS rooms is one sub-train for each unit, with its main supply fan and associated air conditioning equipment. In the event of an accident with the plant operating with one sub-train per unit, a single active failure could result in loss of one operating sub-train. In that situation, the initial preliminary room heatup calculation indicated the potential that post-accident control room and SSPS room ventilation may require compensatory action in order to control the temperature below the TS surveillance limit.

However, the final calculation results on control room and SSPS room temperatures using updated heat loads showed that acceptable room temperatures would be maintained in the control room and in both SSPS rooms with operation of one CRVS sub-train from either unit.

The results are summarized as follows:

SSPS Room

The loss of one CRVS sub-train of ventilation would result in loss of ventilation to one of the SSPS rooms. The loss of ventilation to a SSPS room will result in the room temperature increasing to approximately 115.7°F. This calculated temperature is below the limit to which the SSPS cabinets have been functionally tested; therefore, there would be no impairment of the SSPS function.

The loss of air flow from the fans is annunciated. This alarm alerts the operator to start the redundant sub-train. In addition, the SSPS room has a temperature alarm with a setpoint at 101°F. The alarm would provide an independent second level alert to the operators of high temperature in the room and a possible degradation of the ventilation, if they were not already aware of this situation from the associated control room ventilation degradation.

As a prudent measure, the annunciator response procedure has been revised to include an action in response to a SSPS room high temperature alarm. The interconnecting doors between the SSPS room and computer room and between the computer room and the control room will be opened. This permits CRVS ventilation flow to the control room to interact with the SSPS room. The calculated SSPS room temperature in that configuration is approximately 109.7°F.

Control Room

Loss of one CRVS sub-train would result in the common control room ventilation being supplied by the sub-train of the other unit. The loss of one CRVS sub-train of control room ventilation will result in the control room temperature increasing to approximately 88.8°F. This temperature increase is below the TS limit for control room temperature and will not impair the control room function.

Loss of fan flow from a Unit train is annunciated. The control room does not need a high temperature alarm since the room is constantly manned and the operators are aware of the temperature increase without alarms. Prudent action, in existing procedures, would be initiated by the operators to restore operation of the lost CRVS sub-train or to initiate operation of the redundant sub-train of that unit's train. When control room ventilation from the affected sub-train is restored, the air flow to the SSPS room is also restored.

The ventilation system design facilitates the restoration of a CRVS sub-train. Only one sub-train in each unit is operating at the same time. The other sub-train has its operation control switch (HS)(VI) in the "off" position. Each sub-train has two independent, manually selected, power

sources (BU)(ED). Each sub-train has the capability to be powered from either Unit 1 or Unit 2. Power source selection is done in the 480 volt vital bus (BU)(ED) rooms. The train operation switches are located in the control room. The duplication of power sources ensures redundancy and provides the capability to sustain a single electrical power source failure.

Summary

In the event of a loss of a CRVS sub-train, the SSPS room and control room temperatures would increase. The maximum temperatures reached are within TS limits. Current plant procedures direct the operator to restore function of the lost sub-train or to initiate operation of the redundant sub-train.

The above analysis shows that the health and safety of the public were not affected by this condition.

V. Corrective Actions

A. Immediate Corrective Actions:

Immediate corrective action was taken until the final calculations were completed. This action was to advise the operators to enter the TS 3.7.5.1 Action Statement when any specified CRVS sub-train component is out of service. This action assured that any equipment outages that affected redundant components in the CRVS sub-trains would place the applicable unit in the TS Action Statement.

Since the final calculations have been completed, this immediate corrective action is no longer required and is rescinded. Prudent actions are as described in Section IV.

B. Corrective Actions to Prevent Recurrence:

PG&E calculation of the control room and SSPS room temperature with one CRVS sub-train in operation demonstrated the adequacy of the existing control room ventilation system design. Consequently, no corrective actions to prevent recurrence are required.

VI. Additional Information

A. Failed Components:

None.

B. Previous LERs on Similar Problems:

None.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
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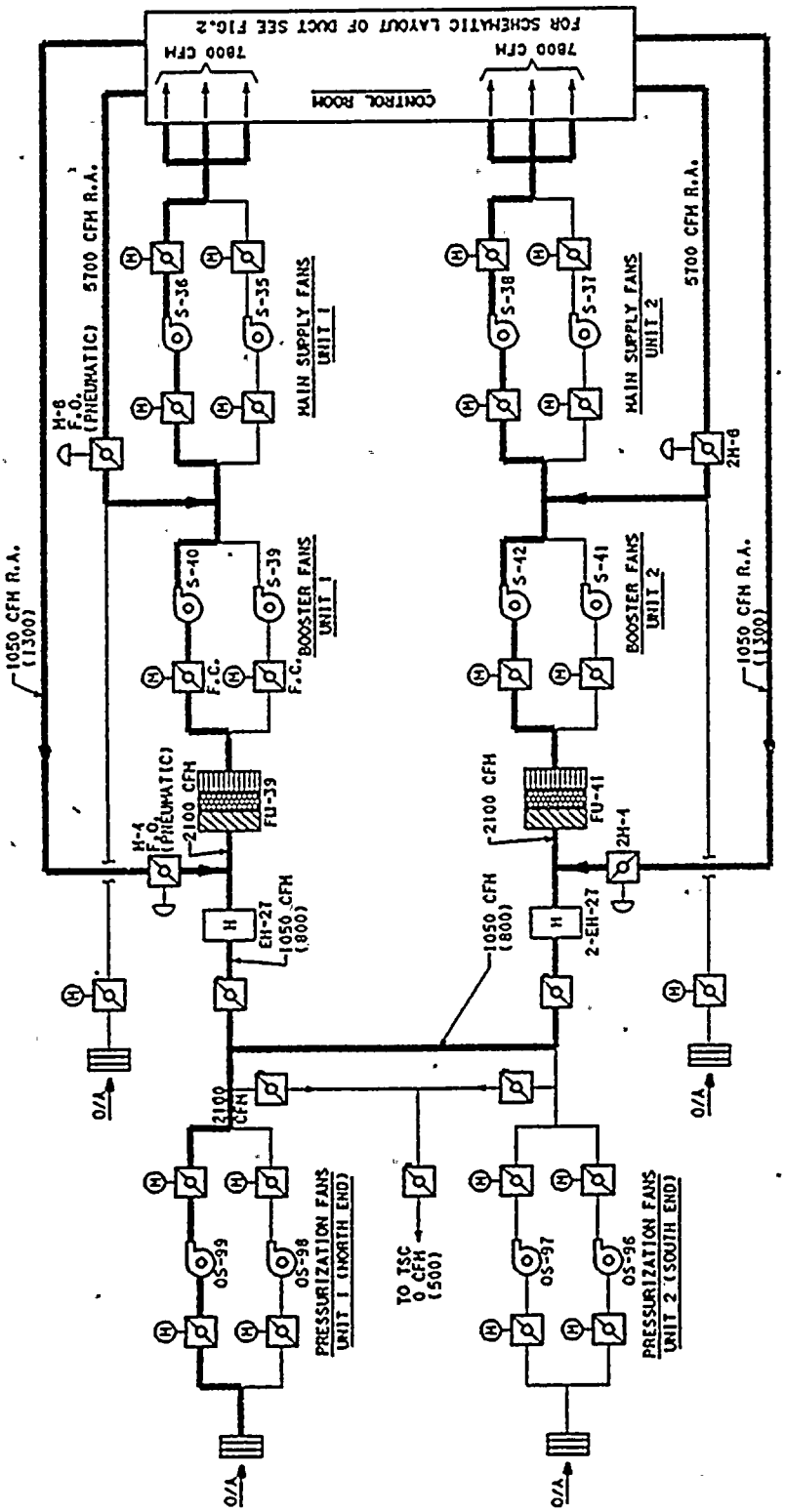
TEXT (17)

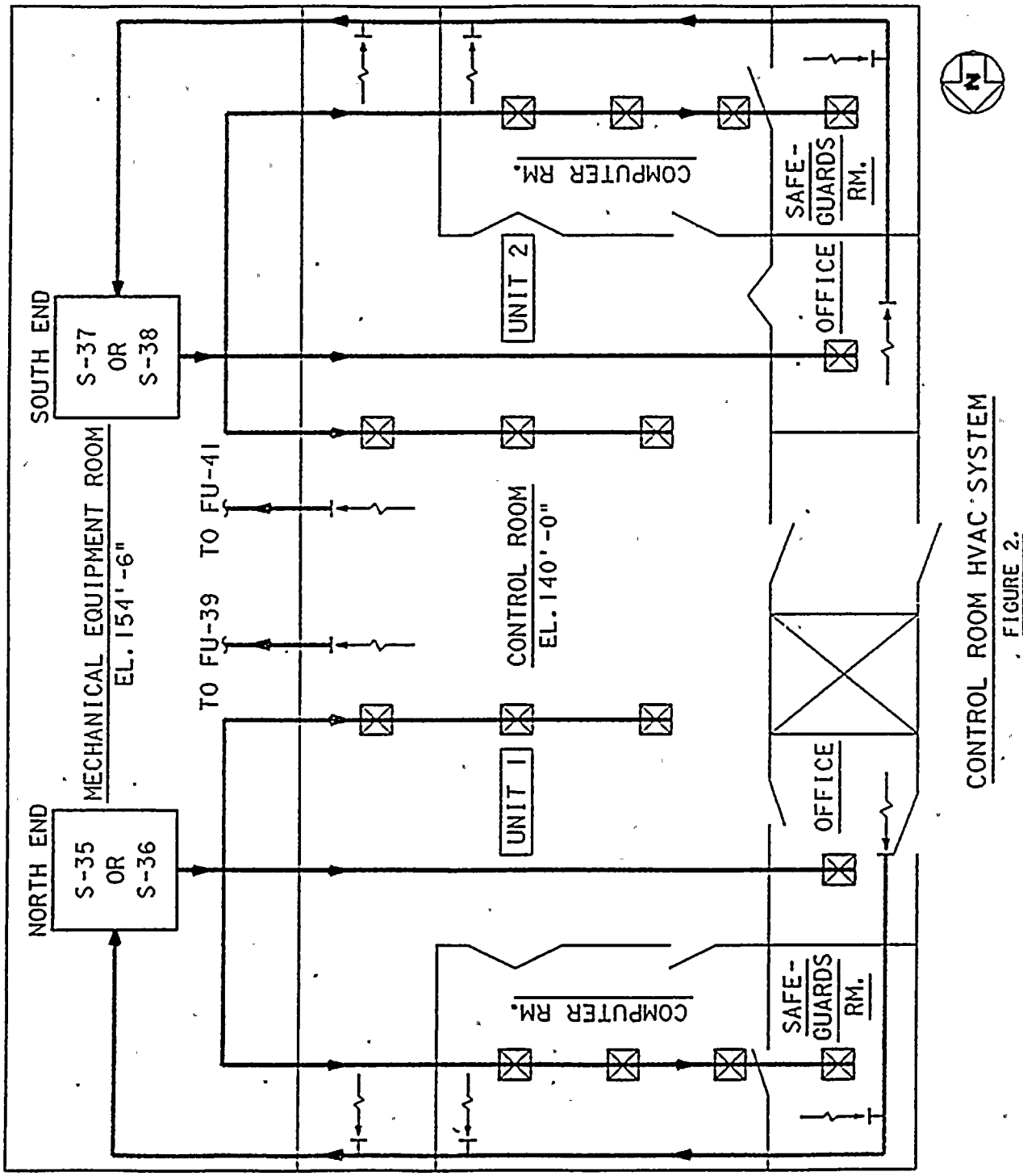


CONTROL ROOM HVAC SYSTEM.

FIGURE 1.

MODE 4 OPERATION
(CONTROL ROOM PRESSURIZATION)

O/A - OUTSIDE AIR
R.A. - RECIRCULATED AIR
( ) CFM AFTER TSC HAS BEEN MANUALLY ALIGNED



CONTROL ROOM HVAC SYSTEM

FIGURE 2.