DEC 8 1977

Docket Nos. 50-275/323

MEMORANDUM FOR: R. Bosnak, Chief, Mechanical Engineering Branch, DSS

THRU: T. M. Novak, Chief, Reactor Systems Branch, DSS

FROM: S. L. Israel, Section Leader, Reactor Systems Branch, DSS

SUBJECT: EQUIPMENT NEEDED TO ACHIEVE RHR OPERATING CONDITIONS AT DIABLO CANYON

On November 22, 1977 a meeting was held in Bethesda with representatives of Pacific Gas and Electric Company (PG&E), Westinghouse, and the NRC staff to discuss plant systems required to shutdown Diablo Canyon following a Safe Shutdown Earthquake (Hosgri event). As a result of this meeting, additional equipment have been identified to achieve RHR operating conditions following a postulated SSE.

The basic functions that must be performed following scram and loss of offsite power are:

a) heat remvoal
b) steam generator depressurization
c) boration
d) primary system depressurization
e) surveillance of boron concentration
f) surveillance of primary and secondary system parameters

The applicant will justify in a future amendment that degasification and letdown of the primary system are not required to achieve RHR operation.

Our review of the systems required to carry out these functions included single failure considerations. In this regard, we limited operator action outside of control room to local actuation or isolation of systems not requiring continuous modulation. The applicant will provide modifications to the components that do not have safety-grade operators.

The following equipment (other than valves) are required for a safe shutdown in addition to those components identified in Table 7.5 of Amendment 56.

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1. Condensate storage tank
2. Motor-driven auxiliary feedwater pumps
3. Raw water storage reservoir
4. Refueling water storage tank
5. Boric acid tank heaters

The following instrumentation are also required:

1. Steam generator level
2. Pressurizer level
3. Primary system pressure
4. Primary system temperature
5. Boric acid tank level

The active valves presented in Enclosure 1 are required in addition to those identified in Table 7-7 of Amendment 56.

The applicant previously submitted piping schematics that were color-coded to indiadee lines that must not fail during an SSE. Enclosure 2 lists schematics of fluid lines in essential systems needed to achieve RHR operating conditions. MEB should verify that open passive valves in the color coded lines will not close because of SSE loads, or that closed isolation valves will not open.

Original signed by:

Sanford L. Israel, Section Leader
Reactor Systems Branch
Division of Systems Safety

Enclosures:
As Stated

cc: D. Ross
J. Stolz
D. Allison
V. Benaroya
T. Ippolito
T. Novak
S. Israel
G. Kelly

we didn't state unequivocally that Diablo had to redesign dump valve controllers. We "suggested" this was good course only.

OFFICE	DSS:RSB	DSS:RSB	DSS:RSB			
SURNAME	GKelly:cj	SIsrael	TNovak			
DATE	12/05/77	12/7/77	12/8/77			

ENCLOSURE 1

ACTIVE VALVES TO BE ADDED TO TABLE 7-7

1.	MOV	LCV	106	Dwg 3.2-03, Sht 2
2.	MOV	LCV	107	Dwg 3.2-03, Sht 2
3.	MOV	LCV	108	Dwg 3.2-03, Sht 2
4.	MOV	LCV	109	Dwg 3.2-03, Sht 2
5.	MOV	FCV	95	Dwg 3.2-04, Sht 1/4
6.	MOV	FCV	152	Dwg 3.2-04, Sht 1/4
7.	MOV	FCV	15	Dwg 3.2-04, Sht 1/4
8.	Electro-hydraulic	LCV	110	Dwg 3.2-03, Sht 2
9.	Electro-hydraulic	LCV	111	Dwg 3.2-03, Sht 2
10.	Electro-hydraulic	LCV	113	Dwg 3.2-03, Sht 2
11.	Electro-hydraulic	LCV	115	Dwg 3.2-03, Sht 2
12.	MOV	FCV	437	Dwg 3.2-03, Sht 2
13.	MOV	FCV	436	Dwg 3.2-03, Sht 2
14.	Air Operated		8145	Dwg 3.2-08, Sht 4
15.	Air Operated	HCV	142	Dwg 3.2-08, Sht 4
16.	MOV		8805A/B	Dwg 3.2-09, Sht 2
17.	Air Operated	PCV	455C	Dwg 3.2-08, Sht 4
18.	Air Operated	PCV	456	Dwg 3.2-08, Sht 4
19.	Air Operated	PCV	474	Dwg 3.2-08, Sht 4
20.	Air Operated		8146	Dwg 3.2-08, Sht 4
21.	Air Operated		8147	Dwg 3.2-08, Sht 4
22.			9356A	Dwg 3.2-11
23.			9351A/B	Dwg 3.2-11
24.	MOV	FCV	355	Dwg 3.2-14, Sht 1,2,3,8
25.	Air Operated	FCV	364	Dwg 3.2-14, Sht 1,2,3,8
26.	Air Operated	FCV	365	Dwg 3.2-14, Sht 1,2,3,8
27.	MOV	FCV	41	
28.	MOV	FCV	42	
29.	MOV	FCV	43	
30.	MOV	FCV	44	

ENCLOSURE 2

ESSENTIAL PIPING SCHEMATICS

Heat Removal (Auxfeed System)

Dwg 3.2-16, Sht 8
Dwg 3.2-03, Sht 2
Dwg 3.2-04, Sht 1
Dwg 3.2-04, Sht 4

Steam Generator Depressurization

Dwg 3.2-04, Sht 1
3.2-04, Sht 4

Boration

Dwg 3.2-08, Sht 4 (Additional lines)
3.2-08, Sht 7
3.2-09, Sht 2

Primary System Depressurization

Dwg 3.2-07, Sht 2 (Additional lines)
3.2-08, Sht 4 (Additional lines)
3.2-08, Sht 7
3.2-09, Sht 2

Boron Concentration Surveillance

Dwg 3.2-11 (Lines to be added)

RHR System

Dwg 3.2-09, Sht 3
3.2-10, Sht 1

ENCLOSURE 2--continued

CCW System

Dwg 3.2-14, Sht 1
3.2-14, Sht 2
3.2-14, Sht 3
3.2-14, Sht 8

Salt Water System

Dwg 3.2-17, Sht 1