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AUTH.NAME AUTHOR AFFILIATION
BRAND,D.A. Pacific Gas & Electric Co.
RECIP.NAME RECIPIENT AFFILIATION
KNIGHTON,G.W. Licensing Branch 3

SUBJECT: Forwards response to NRC 840627 interim rept on review of util 830909 submittal on conformance to Reg Guide 1.97,Rev 3,Rev 1 to summary of compliance table encl.Ack of matl receipt requested.

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	NRR/DL/ORB5	5	5	NRR/DSI/CPB	1	1
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PACIFIC GAS AND ELECTRIC COMPANY

PG&E

77 BEALE STREET • SAN FRANCISCO, CALIFORNIA 94106 • (415) 781-4211 • TWX 910-372-6587

J. O. SCHUYLER
VICE PRESIDENT
NUCLEAR POWER GENERATION

September 4, 1984

PGandE Letter No.: DCL-84-298

Mr. George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Docket No. 50-275, OL-DPR-76
Docket No. 50-323
Diablo Canyon Units 1 and 2
Compliance with Regulatory Guide 1.97, Revision 3

Dear Mr. Knighton:

On June 27, 1984, your office issued an interim report on the review of PGandE's submittal of September 9, 1983 on Conformance to Regulatory Guide 1.97, Revision 3 and requested that PGandE review the report and respond to the items identified in the report as not being fully adequate within 60 days.

Enclosed is PGandE's response to the June 27, 1984 letter. PGandE has responded to each of the NRC items in Enclosure 1 to this letter. Enclosure 2 revises the summary table of compliance previously provided in PGandE's September 9, 1983 submittal on this subject.

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

A003
1/1

Subscribed to in San Francisco, California this 4th day of September, 1984.

Respectfully submitted,

Pacific Gas and Electric Company

By _____
D. A. Brand
Vice President
Engineering

Robert Ohlbach
Philip A. Crane, Jr.
Richard F. Locke
Attorneys for Pacific
Gas and Electric Company

By _____
Philip A. Crane, Jr.

Subscribed and sworn to before me
this 4th day of September, 1984

C. T. Neal-Madison

C. T. Neal-Madison, Notary Public in
and for the City and County of
San Francisco, State of California

My commission expires December 27, 1985.

C. T. NEAL MADISON
NOTARY PUBLIC – CALIFORNIA
CITY AND COUNTY OF
SAN FRANCISCO
My Commission Expires Dec. 27, 1985

Enclosures

cc: J. B. Martin
Service List

ENCLOSURE 1

Diablo Canyon Unit 1

Compliance with Regulatory Guide 1.97, Rev. 3

PGandE Response to NRC Interim Review Report

This enclosure presents PGandE responses to the recommendations made in the Interim Review Report by EG&G Idaho, Inc. in the conclusion section of the NRC's letter dated June 27, 1984.

EG&G Recommendation

"1. Reactor coolant system soluble boron concentration--the licensee should show by analysis that the proposed range is inclusive of all expected boron concentrations (Section 3.3.1)."

PGandE Response

The system discussed in PGandE's September 9, 1983 letter is the Boron Concentration Monitoring System (BCMS). During and after an accident, this continuous on-line boron monitor cannot be assured to be available since letdown, which supplies the BCMS, may isolate. Measurements during and after an accident will be performed as needed using the Post-Accident Sampling System (PASS). The measurement range for this system is from 0 to 6,000 ppm B limited only by the sampling procedure. Higher concentrations may be determined using current testing procedures for 12% B concentrations.

EG&G Recommendation

"2. Radiation level in circulating primary coolant--the licensee should commit to installing qualified instrumentation for this variable when it becomes available (Section 3.3.2)."

PGandE Response

PGandE will evaluate qualified systems as they become available and install a qualified system during the next refueling outage after it is purchased and delivered to the site.

EG&G Recommendation

"3. Containment effluent radioactivity--noble gases from steam generator (SG) blowdown tank vent--the applicant should:

a. justify Category 3 instrumentation instead of Category 2,
b. justify not displaying this variable in the control room, and
c. show that the system isolates on instrument failure (Section 3.3.4)."

PGandE Response

During an accident, the SG blowdown is isolated upon auxiliary feedwater pump start or containment isolation. Additionally, upon high signals received from radiation monitors both downstream of the blowdown tank and in upstream sample lines, the SG blowdown system isolates. The SG blowdown tank drain is then automatically rerouted to the liquid radwaste system. The vent path's activity is continuously monitored by use of a recorder, as well as indication located remotely. High radiation and instrument failure are alarmed on the main control board. The indication, even though outside the control room, is checked at least once per day by a roving operator. With these isolation modes and additional shift checks performed by operators, tank vent effluent streams are effectively controlled. Due to these controls, PGandE does not consider the steam generator blowdown tank vent a potential release path. Nevertheless, the following information is provided.

a. The steam generator blowdown tank vent radiation monitor is located at elevation 140' outside the building. It is not exposed to any harsh environment caused by a LOCA or steam line break. This high quality commercial grade device is powered from a highly reliable source.

b. Although radiation monitors in the blowdown system are not displayed in the control room, annunciation alarms and printout occur on a high radiation signal which provides the operators with the required information. Recorders and indicators, checked once per day, are displayed on the radiation monitoring panel. If an alarm sounds, the operator verifies that automatic isolation has occurred, or, if automatic isolation has not occurred, he takes appropriate action. This verification is done by valve indication in the control room.

c. On instrument failure, an alarm annunciation occurs in the control room and operators will take the appropriate manual action to isolate the blowdown tank from the SG.

EG&G Recommendation

"4. Residual heat removal exchanger outlet temperature--the licensee should provide an analysis that shows his existing outlet temperature instrumentation will adequately cover the minimum temperature expected during and following an accident (Section 3.3.5)."

PGandE Response

The minimum sea water temperature recorded over the last 10 years at Diablo Canyon is 45°F. The Auxiliary Salt Water System (ASW) cools the Component Cooling Water System (CCW) which in turn cools the Residual Heat Removal System (RHR). Very conservatively, assuming that the CCW system

enters the RHR heat exchanger at the same temperature as the saltwater (45°F), one may calculate the minimum expected temperature exiting the heat exchanger as follows:"

$Q = UA (\Delta T)$

Where Q = decay heat production rate 10^7 seconds after an accident.

$Q = 1.17 \times 10^7$ BTU/hr, (FSAR Section 9.2)
UA = RHR heat exchanger heat transfer coefficient at design conditions

$UA = 1.64 \times 10^6$ BTU/hr°F

ΔT = the temperature difference between RHR and CCW water at the exit of the RHR heat exchanger

$\Delta T = T_{rhr\ out} - T_{ccw\ in}$, °F

$\Delta T = T_{rhr\ out} - 45°F.$

Solving the equation for $T_{rhr\ out}$, $T_{rhr\ out} = 52°F$, which is greater than the measurement limit of 50°F. Therefore, the 50°F limit currently in place at Diablo Canyon for RHR heat exchanger outlet flow is acceptable.

Furthermore, additional assurance is gained by operator action. The CCW system alarms in the control room at a minimum temperature of 60°F. If this alarm occurs, according to procedure, operators reduce ASW system flow until the CCW temperature is greater than 60°F. This action maintains RHR temperatures greater than 60°F.

Due to the procedures in place and expected sea water temperatures at Diablo Canyon, PGandE believes that the 50°F limit for the RHR outlet instrumentation is acceptable.

EG&G Recommendation

"5. Boric acid charging flow--the licensee needs to address environmental qualification in accordance with Section (g) to 10 CFR 50.49, and show that the power supply for this instrumentation meets the high-reliability specification of Regulatory Guide 1.97 (Section 3.3.7)."

PGandE Response

Boric acid charging flow instrumentation will be environmentally qualified and supplied with Class 1E power by the next refueling outage.

EG&G Recommendation

"6. Steam generator pressure--the licensee should show that the safety valves are sized for and are capable of maintaining the steam generator pressure to less than the 1200 psig range supplied (Section 3.3.9)."

PGandE Response

The lowest safety valve (SV) setting is 1065 psig. Regulatory Guide 1.97 recommends an indication range "... from atmosphere pressure to 20% above the lowest safety valve setting." This would indicate that the instrumentation should include a range from 0 to 1278 psig. Diablo Canyon does not explicitly meet this recommendation.

Each steam generator (SG) has five safety valves collectively capable of relieving 4,112,800 lb/hr at rated flow. This corresponds to 113% of rated steam flow produced by each SG. The highest SV setting is 1115 psig. With a lift accuracy of 1% as required by code, this would indicate that the highest pressure capable of being produced is 1115 X 1.01 = 1125 psig. This is less than the required 1200 psig and within the range of our instrumentation. Therefore, PGandE concludes that the safety valves are capable of maintaining SG pressure to less than 1200 psig; hence, there is no practical need to extend the instrument range to 1278 psig. PGandE believes the instrument range of 0-1200 psig to be adequate for Diablo Canyon.

EG&G Recommendation

"7. Heat removed by containment fan heat removal system--the licensee should show that the alternative instrumentation proposed for this variable is Category 2, and that they directly measure this variable (Section 3.3.10)."

PGandE Response

During and following an accident, the operation of heat removal by the Containment Fan Heat Removal System will be monitored in two steps:

1. Operators will first verify that the Containment Fan Coolers (CFCs) have realigned to the accident mode. This is verified by observing on the main control board that:

   a. CFC motors automatically changed from high speed (normal) to low speed (accident). Indication of this parameter meets Category 2 requirements.

   b. CFC dampers switched from the normal to accident position. Indication of this parameter meets Category 2 requirements.

   c. Component Cooling Water (CCW) flow to the CFCs is adequate for the accident condition. Indication of his parameter does not meet the EQ requirements of Category 2. However, the CCW flow loops are in a mild environment location and therefore do not need to be Category 2. They are powered by a Class IE source and are of high-commercial grade.

2. Throughout the accident, the operators will monitor the change in the relevant containment variables affected by the Containment Heat Removal System. These variables are containment pressure and temperature and are directly monitored in the main control room. Containment pressure meets Category 1 and containment temperature meets Category 2 requirements.

EG&G Recommendation

"8. Noble gas--common plant vent flow--the licensee needs to address environmental qualification in accordance with Section(g) to 10 CFR 50.49, and justify the lack of quality assurance for this variable (Section 3.3.11)."

PGandE Response

The containment plant vent flow monitor is a Category 3 device because it is in a non-harsh environment location. It is of high quality commercial grade.

EG&G Recommendation

"9. Particulates and halogens--all other identified release points--the licensee should identify the flow range monitored and justify any deviation. They should also show that the particulates and halogens are monitored for the entire range of 10^{-3} to 10^{2} uCi/cc (Section 3.3.13)."

PGandE Response

DCPP has a common plant vent with a single flow monitor ranged for 0 to 300,000 cfm. The maximum expected flow out of the plant vent during normal operation is 110,500 cfm. There is no deviation as the existing range exceeds the required range of 0-110% vent design flow.

Each radiation monitor (particulate, halogen or noble gas) associated with the plant vent has its flow control system set up to supply an isokinetic sample source to the detector. This flow is equivalent to the design flow listed above.

A plant vent grab sampler contains both a particulate filter and an iodine cartridge. This sampling can cover the recommended range of 10^{-3} to 10^{2} uCi/cc for particulates and iodine.

EG&G Recommendation

"10. The schedule for installation of upgraded instrumentation for Unit 2 needs to be provided (Section 3.1)."

PGandE Response

As stated in PGandE's September 9, 1983 submittal, the schedule for Unit 2 upgrades will be submitted before Unit 2 fuel load, which is currently scheduled for November 26, 1984.

EG&G Recommendation

"11. The licensee should identify plant specific Type A variables and commit to the Category 1 recommendations for these variables (Section 3.2)."

PGandE Response

The attached table is provided for plant specific Type A variables.

PGandE RESPONSE TO NRC ITEM NO. 11

COMPLIANCE WITH REGULATORY GUIDE 1.97, REV. 3
FOR PLANT SPECIFIC TYPE A VARIABLES

VARIABLE	CATE-GORY	INSTR. RANGE	EQ	SEISMIC QUALI-FICATION	QA	SCHEDULE	REDUNDANT	POWER SUPPLY	CONTROL ROOM	LOCATION TSC	LOCATION EOF	COMMENTS
Wide Range RCS Pressure	NRC 1	Plant Specific	Yes	Yes	Yes		Yes	1E	Continuous Indication			Type-A
	DC-1 1	0-3000 psig	Yes	Yes	Yes	Complete	Yes	1E	Continuous Indication & Recording	Yes	Yes	Type-A
Condensate Storage Tank Level	NRC 1	Plant Specific	Yes	Yes	Yes		Yes	1E	Continuous Recording			Type-A
	DC-1 1	0-100%	Yes	Yes	Yes	Complete	Yes	1E	Continuous Recording	Yes	Yes	Type-A
SG Level	NRC 1	Plant Specific	Yes	Yes	Yes		Yes	1E	Continuous Recording			Type-A
	DC-1 1	From Tube Sheet to Separators	Yes	Yes	Yes	Complete	Yes	1E	Continuous Recording	Yes	Yes	Type-A

Note 1: Installation is complete. Westinghouse preparing qualifications report.

PGandE RESPONSE TO NRC ITEM NO. 11

COMPLIANCE WITH REGULATORY GUIDE 1.97, REV. 3
FOR PLANT SPECIFIC TYPE A VARIABLES

VARIABLE	CATE-GORY	INSTR. RANGE	EQ	SEISMIC QUALI-FICATION	QA	SCHEDULE	REDUNDANT	POWER SUPPLY	CONTROL ROOM	LOCATION TSC	LOCATION EOF	COMMENTS
Containment Recirc Sump Level	NRC 1	Plant Specific	Yes	Yes	Yes		Yes	1E	Continuous Indication			
	DC-1 1	0 - 100%	Yes	Yes	Yes	Complete	Yes	1E	Continuous Indication	No	No	Type-A
Neutron Flux Readings	NRC 1	Plant Specific	Yes	Yes	Yes		Yes	1E	Continuous Indication			Type-A
	DC-1 1 (Final)	10^{-6}-100% Full Power	Yes	Yes	Yes	First Refueling or 3/31/85	Yes	1E	Continuous Indication	Yes	Yes	Type-A
	DC-1 - (Current)	10^{-9}-120% Full Power	No	No	No		Yes	1E	Continuous Indication	Yes	Yes	---
Core Exit Temperature	NRC 1	Plant Specific	Yes	Yes	Yes		Yes	1E	Continuous Indication			Type-A
	DC-1 1	0-2300°F	Yes	Yes	Yes	Note 1	Yes	1E	Continuous Indication	Yes	Yes	Type-A
Refueling Water Storage Tank Level	NRC 1	Plant Specific	Yes	Yes	Yes		Yes	1E	Continuous Indication			Type-A
	DC-1 1	0-100% of Useable Tank Volume	Yes	Yes	Yes	Complete	Yes	1E	Continuous Indication	Yes	Yes	Type-A
Containment Sump Water Level (WR)	NRC 1	Plant Specific	Yes	Yes	Yes		Yes	1E	Continuous Recording			Type-A
	DC-1 1	CNT Bottom to 600,000 gallons	Yes	Yes	Yes	Complete	Yes	1E	Continuous Recording	Yes	Yes	Type-A

ENCLOSURE 2

Diablo Canyon Unit 1

Compliance with Regulatory Guide 1.97, Rev. 3

Revision 1 to Summary of Compliance Table

The attached table has been updated since its previous issuance in September 1983. This update has resulted from PGandE's efforts to address the NRC's concerns of Regulatory Guide 1.97 Rev. 3 compliance as detailed in the NRC's letter dated June 27, 1984.

SUMMARY OF COMPLIANCE WITH
REGULATORY GUIDE 1.97 REV. 3

	VARIABLE		CATE-GORY	INSTR. RANGE	EQ	SEISMIC QUALI-FICATION	QA	SCHEDULE	REDUNDANT	POWER SUPPLY	CONTROL ROOM	LOCATION TSC	LOCATION EOF	COMMENTS
REACTIVITY CONTROL														
1.	Neutron Flux	NRC	1	10^{-6}-100% Full Power	Yes	Yes	Yes		Yes	1E	Continuous Indication			
		DC-1 (Current)	-	10^{-9}-120% Full Power	No	No	No		Yes	1E	Continuous Indication	Yes	Yes	
		DC-1 (Final)	1	10^{-6}-100% Full Power	Yes	Yes	Yes	First Refueling or 3/31/85	Yes	1E	Continuous Indication	Yes	Yes	
2.	Control Rod Position	NRC	3	Full In or Not Full In	No	No	No		No	--	Continuous Indication			
		DC-1	3	Full Range Indication	No	No	No	Complete	No	II	Continuous Indication	Yes	Yes	
3.	RCS Soluble Boron Concentration	NRC	3	0-6000 ppm	No	No	No		No	--	Note 1			
		DC-1	3	0-6000 ppm	No	Yes	No	Complete	Yes	--	Note 1	No	No	Note 1
4.	RCS Cold Leg Water Temp.	NRC	1	50-700°F	Yes	Yes	Yes		Yes	1E	Continuous Indication			
		DC-1	1	0-700°F	Yes	Yes	Yes	Complete	Yes	1E	Continuous Recording	Yes	Yes	
CORE COOLING														
5.	RCS Hot Leg Water Temp.	NRC	1	50-700°F	Yes	Yes	Yes		Yes	1E	Continuous Recording			
		DC-1	1	0-700°F	Yes	Yes	Yes	Complete	Yes	1E	Continuous Recording	Yes	Yes	
6.	RCS Cold Leg Water Temp.	(see item 4)												
7.	RCS Pressure	NRC	1	0-3000 psig	Yes	Yes	Yes		Yes	1E	Continuous Indication			
		DC-1	1	0-3000 psig	Yes	Yes	Yes	Complete	Yes	1E	Continuous Indication & Recording	Yes	Yes	

SUMMARY OF COMPLIANCE WITH
REGULATORY GUIDE 1.97 REV. 3

	VARIABLE		CATE-GORY	INSTR. RANGE	EQ	SEISMIC QUALI-FICATION	QA	SCHEDULE	REDUNDANT	POWER SUPPLY	CONTROL ROOM	LOCATION TSC	LOCATION EOF	COMMENTS
8.	Core Exit Temperature	NRC	1	200-2300°F	Yes	Yes	Yes		Yes	1E	Continuous Indication			
		DC-1	1	0-2300°F	Yes	Yes	Yes	Note 2	Yes	1E	Continuous Indication	Yes	Yes	Note 2
9.	Coolant Level in Reactor	NRC	1	Bottom of Hot Leg to Top of Vessel	Yes	Yes	Yes		Yes	1E	Continuous Recording			
		DC-1	1	Bottom to Top of Vessel	Yes	Yes	Yes	Note 2	Yes	1E	Continuous Recording	Yes	Yes	Note 2
10.	Degrees of Subcooling	NRC	2	200°F Subcooling to 35°F Superheat	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1	2	200°F Subcooling to 40°F Superheat	Yes	No	Yes	Complete	No	1E	Continuous Indication & Recording	Yes	Yes	
MAINTAINING REACTOR COOLANT SYSTEM INTEGRITY														
11.	RCS Pressure (see item 7)													
12.	Containment Sump Water Level (WR)	NRC	1	Plant Specific	Yes	Yes	Yes		Yes	1E	Continuous Indication			
		DC-1	1	CNT Bottom to 600,000 gallons	Yes	Yes	Yes	Complete	Yes	1E	Continuous Indication	Yes	Yes	
13.	Containment Sump Water Level (NR)	NRC	2	Sump Depth	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1	2	Sump Depth	Yes	No	Yes	Complete	Yes	1E	Continuous Indication	No	No	
14.	Containment Pressure	NRC	1	-5 to Design Pressure (psig)	Yes	Yes	Yes		Yes	1E	Continuous Indication			
		DC-1	1	-5 to 200 psig	Yes	Yes	Yes	Complete	Yes	1E	Continuous Recording	Yes	Yes	
MAINTAINING CONTAINMENT INTEGRITY														
15.	Containment Isolation Valve Position	NRC	1	Closed-Not Closed	Yes	Yes	Yes		Yes	1E	Continuous Recording			
		DC-1	1	Closed-Not Closed	Yes	Yes	Yes	First Refueling or 3/31/85	Yes	1E	Continuous Recording	Yes	Yes	Note 3

SUMMARY OF COMPLIANCE WITH
REGULATORY GUIDE 1.97 REV. 3

VARIABLE		CATE-GORY	INSTR. RANGE	EQ	SEISMIC QUALI-FICATION	QA	SCHEDULE	REDUNDANT	POWER SUPPLY	CONTROL ROOM	LOCATION TSC	LOCATION EOF	COMMENTS
16. Containment Pressure (see item 14)													
FUEL CLADDING													
17. Core Exit Temperature (see item 8)													
18. Radioactivity Concentration Circulating Primary Coolant	NRC	1	1/2 Tech Spec Limit to 100 times Tech Spec Limit, R/hr	Yes	Yes	Yes		Yes	1E	Continuous Recording			
	DC-1			--	--		See Note 4	--	--	--	No	No	Note 4
19. Analysis of Primary Coolant (Gamma Spectrum)	NRC	3	10 mCi/ml to 10 Ci/ml or TID-14844 Source Term in Coolant Volume	No	No	No		No		Continuous Recording			
	DC-1	3	10 mCi/gm to 10 Ci/gm	No	No	No	Complete	No	II	--	No	No	
REACTOR COOLANT PRESSURE BOUNDARY													
20. RCS Pressure (see item 7)													
21. Containment Pressure (see item 14)													
22. Containment Sump Water Level (see items 12 and 13)													
23. Containment Area Radiation	NRC	1	1 to 10^7 R/hr	Yes	Yes	Yes		Yes	1E	Continuous Recording			
	DC-1	1	1 to 10^7 R/hr	Yes	Yes	Yes	Complete	Yes	1E	Continuous Recording	Yes	Yes	
24. Effl. Radio-activity-Noble Gas Effl. From Condenser Air Re-moval Sys. Exhaust	NRC	3	10^{-6} to 10^{-2} mCi/cc	No	No	No		No		Continuous Recording			
	DC-1	3	10^{-4} to 3 mCi/cc	No	No	No	Complete	No	II	Strip Chart Recorder	Yes	Yes	Note 5
CONTAINMENT													
25. RCS Pressure (see item 7)													
26. Containment Hydrogen Concentration	NRC	1	0 to 10%	Yes	Yes	Yes		Yes	1E	Continuous Recording			
	DC-1	1	0 to 10%	Yes	Yes	Yes	Complete	Yes	1E	Continuous Recording	Yes	Yes	

SUMMARY OF COMPLIANCE WITH
REGULATORY GUIDE 1.97 REV. 3

	VARIABLE		CATE-GORY	INSTR. RANGE	EQ	SEISMIC QUALI-FICATION	QA	SCHEDULE	REDUNDANT	POWER SUPPLY	CONTROL ROOM	LOCATION TSC	LOCATION EOF	COMMENTS
27.	Containment Pressure (see item 14)													
28.	Containment Effl. Radioactivity-Noble Gases from Plant Vent (including cont. purge)	NRC	2	10^{-6}-10^{-2} mCi/cc	Yes	No	Yes		No	Highly Reliable	Continuous Recording			
		DC-1	2	10^{-6}-10^{4} mCi/cc	Yes	No	Yes	Complete	No	1E	Continuous Recording	Yes	Yes	
29.	Radiation Exposure Rate (Inside Bldgs or Areas)	NRC	2	10^{-1} to 10^{4} R/hr	Yes	No	Yes		No	Highly Reliable	Continuous Recording			
		DC-1	2	See Note 7	Yes	No	Yes	First Refueling or 3/31/85	No	1E	Continuous Recording	No	No	Note 7
	RESIDUAL HEAT REMOVAL SYSTEM													
30.	RHR System Flow	NRC	2	0-110% Design Flow	Yes	No	Yes		No	Highly Reliable	Continuous Recording			
		DC-1	2	0-5000 gpm	Yes	No	Yes	Complete	No	1E	Continuous Indication	Yes	Yes	
31.	RHR Heat Exchang. Outlet Temp.	NRC	2	40-350°F	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1	2	50-400°F	Yes	No	Yes	Complete	No	1E	Continuous Indication	Yes	Yes	Note 8
	SAFETY INJECTION SYSTEMS													
32.	Accumulator Tank Level	NRC	2	10%-90% Volume	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1 (Current)	2	59%-67% Volume	Yes	No	Yes	Complete	No	1E	Continuous Indication	Yes	Yes	Note 9
		DC-1 (Final)	2	10%-90% Volume	Yes	No	Yes	First Refueling or 3/31/85	No	1E	Continuous Indication	Yes	Yes	

SUMMARY OF COMPLIANCE WITH
REGULATORY GUIDE 1.97 REV. 3

	VARIABLE		CATE-GORY	INSTR. RANGE	EQ	SEISMIC QUALI-FICATION	QA	SCHEDULE	REDUNDANT	POWER SUPPLY	CONTROL ROOM	LOCATION TSC	LOCATION EOF	COMMENTS
33.	Accumulator Tank Pressure	NRC	2	0-750 psig	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1	2	0-700 psig	Yes	No	Yes	Complete	No	1E	Continuous Indication	Yes	Yes	Note 10
34.	Accumulator Isolation Valve Position	NRC	2	Closed or Open	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1	2	Closed or Open	Yes	No	Yes	First Refueling or 3/31/85	No	1E	Continuous Indication	No	No	Note 3
35.	Boric Acid Charging Flow	NRC	2	0-110% Design	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1	2	0-150 gpm	Yes	No	Yes	First Refueling	No	1E	Continuous Indication	No	No	
36.	Flow in HPI System	NRC	2	0-110% Design	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1	2	0-1000 gpm	Yes	No	Yes	Complete	No	1E	Continuous Indication	Yes	Yes	
37.	Flow in LPI System	NRC	2	0-110% Design	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1	2	0-800 gpm	Yes	No	Yes	Complete	No	1E	Continuous Indication	Yes	Yes	
38.	Refueling Water Storage Tank Level	NRC	2	Top to Bottom	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1	1	0-100%	Yes	Yes	Yes	Complete	Yes	1E	Continuous Indication	Yes	Yes	Note 11
PRIMARY COOLANT SYSTEM														
39.	Reactor Coolant Pump Status	NRC	3	Motor Current	No	No	No		No		Continuous Indication			
		DC-1	3	Motor Current 0-400 A	No	No	No	Complete	No	II	Continous Indication	Yes	Yes	
40.	Primary System Safety Relief Valve	NRC	2	Closed-Not Closed	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1	2	Closed-Not Closed	Yes	No	Yes	Complete	No	1E	Continuous Indication	No	No	Note 12

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	VARIABLE		CATE-GORY	INSTR. RANGE	EQ	SEISMIC QUALI-FICATION	QA	SCHEDULE	REDUNDANT	POWER SUPPLY	CONTROL ROOM	LOCATION TSC	LOCATION EOF	COMMENTS
41.	Pressurizer Level	NRC	1	Bottom to Top	Yes	Yes	Yes		Yes	1E	Continuous Indication			
		DC-1	1	0-100%	Yes	Yes	Yes	Complete	Yes	1E	Continuous Indication	Yes	Yes	Note 11
42.	Pressurizer Heater Status	NRC	2	Electric Current	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1	2	Electric Power 0-600 kW	Yes	No	Yes	Complete	No	1E	Continuous Indication	No	No	
43.	Quench Tank (PRT) Level	NRC	3	Top to Bottom	No	No	No		No		Continuous Indication			
		DC-1	3	0-100%	No	No	No	Complete	No	II	Continuous Indication	Yes	Yes	Note 11
44.	Quench Tank (PRT) Temperature	NRC	3	50 - 750°F	No	No	No		No		Continuous Indication			
		DC-1	3	50 - 300°F	No	No	No	First Refueling or 3/31/85	No	II	Continuous Indication	Yes	Yes	Note 13
45.	Quench Tank (PRT) Pressure	NRC	3	0-Design	No	No	No		No		Continuous Indication			
		DC-1	3	0-100 psig	No	No	No	Complete	No	II	Continuous Indication	Yes	Yes	
	SECONDARY SYSTEM (STEAM GENERATOR)													
46.	Steam Generator Level	NRC	1	From Tube Sheet to Separators	Yes	Yes	Yes		Yes	1E	Continuous Indication			
		DC-1	1	From Tube Sheet to Separators	Yes	Yes	Yes	Complete	Yes	1E	Continuous Indication	Yes	Yes	
47.	Steam Generator Pressure	NRC	2	From Atm Press to 20% above the Lowest Safety Vlv. Setting	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1	2	0-1200 psia	Yes	No	Yes	Complete	Yes	1E	Continuous Indication	Yes	Yes	Note 14

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	VARIABLE		CATE-GORY	INSTR. RANGE	EQ	SEISMIC QUALI-FICATION	QA	SCHEDULE	REDUNDANT	POWER SUPPLY	CONTROL ROOM	LOCATION TSC	LOCATION EOF	COMMENTS
48.	Main Steam Flow	NRC	2	--	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1	2	0-4.2 x 10^6 lb/hr	Yes	No	Yes	Complete	No	1E	Continuous Indication	Yes	Yes	
49.	Main Feedwater Flow	NRC	3	0-110% Design	No	No	No		No		Continuous Indication			
		DC-1	3	0-4.2 x 10^6 lb/hr	No	No	No	Complete	No	II	Continuous Indication	Yes	Yes	
	AUXILIARY FEEDWATER OR EMERGENCY FEEDWATER SYSTEM													
50.	Auxiliary or Emergency Feedwater Flow	NRC	2	0-110% Design	Yes	No	Yes		No	1E	Continuous Indication			
		DC-1	2	0-300 gpm	Yes	No	Yes	Complete	No	1E	Continuous Indication	Yes	Yes	
51.	Condensate Storage Tank Level	NRC	1	Plant Specific	Yes	Yes	Yes		Yes	1E	Continuous Indication			
		DC-1	1	0-100%	Yes	Yes	Yes	Complete	Yes	1E	Continuous Indication	Yes	Yes	Note 11
	CONTAINMENT COOLING SYSTEMS													
52.	Containment Spray Flow	NRC	2	0-110% Design	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1 (Current)	2	Note 15										Note 15
		DC-1 (Final)	2	0-3000 gpm	Yes	No	Yes	First Refueling or 3/31/85	No	1E	Continuous Indication	No	No	
53.	Heat Removal By Containment Fan Heat Removal System	NRC	2	Plant Specific	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
								Note 16						Note 16

	VARIABLE		CATE-GORY	INSTR. RANGE	EQ	SEISMIC QUALI-FICATION	QA	SCHEDULE	REDUNDANT	POWER SUPPLY	CONTROL ROOM	LOCATION TSC	LOCATION EOF	COMMENTS
54.	Containment Atmosphere Temperature	NRC	2	40-400°F	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1 (Current)	2	60-120°F	No	No	No		No	II	Continuous Indication	Yes	Yes	Note 17
		DC-1 (Final)	2	40-400°F	Yes	No	Yes	First Refueling or 3/31/85	Yes	1E	Continuous Indication	Yes	Yes	
55.	Containment Sump Water Temperature	NRC	2	50-250°F	Yes	No	Yes		No	Highly Reliable	Continuous Indication	No	No	
		DC-1 (Current)												Note 18
		DC-1 (Final)	2	50-400°F	Yes	No	Yes	First Refueling or 3/31/85	No	1E	Continuous Indication			
	CHEMICAL AND VOLUME CONTROL SYSTEM													
56.	Makeup Flow-In	NRC	2	0-110% Design	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1	2	0-200 gpm	Yes	No	Yes	Complete	No	1E	Continuous Indication	No	No	
57.	Letdown Flow-Out	NRC	2	0-110% Design	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1	2	0-200 gpm	Yes	No	Yes	Complete	No	1E	Continuous Indication	Yes	Yes	
58.	Volume Control Tank Level	NRC	2	Top to Bottom	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1	2	0-100%	Yes	No	Yes	Complete	No	1E	Continuous Indication	Yes	Yes	Note 11
	COOLING WATER SYSTEM													
59.	CCW Temp. to ESF System	NRC	2	40-200°F	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1	2	0-200°F	Yes	No	Yes	Complete	No	1E	Continuous Indication	Yes	Yes	

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	VARIABLE		CATE-GORY	INSTR. RANGE	EQ	SEISMIC QUALI-FICATION	QA	SCHEDULE	REDUNDANT	POWER SUPPLY	CONTROL ROOM	LOCATION TSC	LOCATION EOF	COMMENTS
60.	CCW Flow to ESF System	NRC	2	0-110% Design	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1	2	1-12000 gpm	Yes	No	Yes	Complete	No	1E	Continuous Indication	Yes	Yes	
	RADWASTE SYSTEMS													
61.	High Level Radio-active Liquid Tank Level	NRC	3	Top to Bottom	No	No	No		No		Continuous Indication			
		DC-1	3	0-100%	No	No	No	Complete	No	II	Continuous Indication	No	No	Note 11
62.	Radioactive Gas Holdup Tank Pressure	NRC	3	0-150% Design	No	No	No		No		Continuous Indication			
		DC-1	3	0-200 psig	No	No	No	Complete	No	II	Continuous Indication	No	No	
	VENTILATION SYSTEMS													
63.	Emergency Ventilation Damper Pos.	NRC	2	Open-Closed	Yes	No	Yes		No	Highly Reliable	Continuous Indication			
		DC-1	2	Open-Closed	Yes	No	Yes	Complete	No	1E	Continuous Indication	No	No	
	POWER SUPPLIES													
64.	Status of Standby Power and Other Energy Sources	NRC	2	Voltages, Currents, Pressures	Yes	No	Yes	Complete	No	Highly Reliable	Continuous Indication			
		DC-1	2	Voltages, Currents	Yes	No	Yes	Complete	No	1E	Continuous Indication	Yes	Yes	Note 19
	CONTAINMENT RADIATION													
65.	Containment Radiation (see item 23)													
	AREA RADIATION													
66.	Radiation Exposure Rate (Inside Bldgs. or Areas) (see item 29)													

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VARIABLE	CATE-GORY	INSTR. RANGE	EQ	SEISMIC QUALI-FICATION	QA	SCHEDULE	REDUNDANT	POWER SUPPLY	CONTROL ROOM	LOCATION TSC	LOCATION EOF	COMMENTS
AIRBORNE RADIOACTIVE MATERIALS RELEASED FROM PLANT												
67. Noble Gases and Vent Flow Rate												
Containment or Purge Effluent (see Note 20)												
Reactor Shield Building Annulus (see Note 20)												
Auxiliary Building (see Note 20)												
Condenser Air Removal System Exhaust (see Note 20)												
Common plant vent or multipurpose vent discharging any of above												
- Containment Effluent Radio-activity	NRC	2	Yes	No	Yes		No	Highly Reliable	Continuous Recording			
	DC-1	2 10^{-6}-10^{4} mCi/cc	Yes	No	Yes	Complete	No	1E	Continuous Recording	Yes	Yes	Note 21
- Plant Vent Flow	NRC	2	Yes	No	Yes		No	Highly Reliable	Continuous Recording			
	DC-1	3 0-270% Design	N.A.	No	No	Complete	No	1E	Continuous Recording	No	No	Note 21
Vent From Steam Generator Safety Relief Valves as Atmospheric Dump	NRC	2 10^{-1}-10^{3} mCi/cc	Yes	No	Yes		No	Highly Reliable	Continuous Recording			
	DC-1	2 2×10^{-1}-1×10^{4} mCi/cc	Yes	No	Yes	Complete	No	1E	Continuous Recording	Yes	Yes	
All other identified release points (see Note 20)												
Particulates and Halogens	NRC	3 10^{-3}-10^{2} mCi/cc	No	No	--		No	--	--			
	DC-1	3 Note 22	No	No	--	Complete	No	--	--	No	No	Note 22 Note 21
ENVIRONS RADIATION AND RADIOACTIVITY												
68. Airborne Radio-halogens and Particulates (portable with onsite analysis)	NRC	3 10^{-9}-10^{-3} mCi/cc	No	No	No		No	--	--	--	--	
	DC-1	3 10^{-9}-10^{-3} mCi/cc	No	No	No	Complete	No	--	--	--	--	
69. Plant and Environ Radiation (Portable Instrumentation)	NRC	-- As Specified in R.G. 1.97, Rev. 3	No	No	No		No	--	--	--	--	
	DC-1	-- As Specified in R.G. 1.97, Rev. 3	No	No	No	Complete	No	--	--	Yes	Yes	

SUMMARY OF COMPLIANCE WITH
REGULATORY GUIDE 1.97 REV. 3

	VARIABLE		CATE-GORY	INSTR. RANGE	EQ	SEISMIC QUALI-FICATION	QA	SCHEDULE	REDUNDANT	POWER SUPPLY	CONTROL ROOM	LOCATION TSC	LOCATION EOF	COMMENTS
70.	Plant and Environs Radioactivity (Portable Instrumentation)	NRC	3	Isotopic Analysis	No	No	No		No	--	--	--	--	
		DC-1	3	Multichannel Gamma-Ray Spectrometer	No	No	No	Complete	No	--	--	No	No	Note 23
METEROLOGY		NRC	3	As Specified in R.G. 1.97, Rev. 3	No	No	No		No		Continuous Indication			
		DC-1	3	As Specified in R.G. 1.97, Rev. 3	No	No	No	Complete	No	II	Continuous Indication	Yes	Yes	
ACCIDENT SAMPLING CAPABILITY		NRC	3	As Specified in R.G. 1.97, Rev. 3	No	No	No		No		--			
		DC-1	3	As Specified in R.G. 1.97, Rev. 3	No	No	No	First Refueling or 3/31/85	No	II	--	No	No	Note 24

NOTES:

1. During or following an accident the Boron Concentration Monitoring System (BCMS), a continuous monitoring system with a 0-5000 ppm range, may not be available. At that time, the Post Accident Sampling System (PASS) will be used on an as needed basis. The normal test range is from 0-6000 ppm although the capability to detect higher concentrations is currently available. Continuous indication in the control room is not required during or following an accident.

2. Installation is complete. Westinghouse preparing qualifications report.

3. Some of the devices are qualified. The additional qualified devices are on order: 100% completion is scheduled for first refueling or 3/31/85.

4. A qualified device for in-containment use is currently not available. PGandE will evaluate qualified systems as they become available and install a qualified system during the next refueling outage immediately after the devices are purchased and delivered to the site.

5. Installed range is adequate since air ejector exhaust is routed to the plant vent.

6. Not used.

7. The range of some monitors is 10^{-1} to 10^{7} mR/hr. Other monitors have a range of 10^{-1} to 10^{4} mR/hr. New monitors will be installed as required to meet the range requirement of 10^{7} mR/hr (10^{4} R/hr) by the first refueling or 3/31/85.

8. Installed range is adequate. CCW temperature alarms at 60°F decreasing, and the RHR outlet is not expected to be less than 50°F. Calculations based on minimum sea temperatures over the last 10 years indicate that RHR outlet temperatures are greater than 50°F.

9. Range to be installed is adequate. The indicated range provides assurance that the tanks contain the required volume. Tank depletion is verified by systems pressure and accumulator discharge valve positions.

10. Installed range is adequate. Tank pressure limited to 700 psig by relief valve.

11. Zero to 100% indicates useable volume of tank.

12. Indication for relief valve provided by an acoustic monitor.

13. Present instrument will be respanned.

14. Installed ranged is adequate. Redundant instrumentation is installed and all safety valves lift before 1200 psig. The relieving capability of the safety valves is greater than rated steam flow. Hence, pressure cannot physically reach 1200 psig.

15. Containment spray operation is monitored using pump current, system valve indication, additive tank and RWST levels, and containment pressure. A flow monitor will be installed by the first refueling or 3/31/85.

16. System operability is verified by Containment Fan Cooler (CFC) Motor current meter readings, CFC damper position (normal to accident), unit CCW water flow, Category 3 all exhibited in the control room. Containment pressure (Category 1) and temperature (Category 2) are directly measured in the control room. Heat removal is an indirect measurement of these prime containment parameters. Direct measurement of these parameters is of primary importance to operations. The CCW instrumentation is not in a harsh environment, hence Category 3 is acceptable.

17. Expanding the temperature range will require TSC and EOF software reprogramming.

18. Containment sump temperature can be indirectly monitored during recirculation using RHR discharge temperature. Range is 50-400°F.

19. Diablo Canyon has no standby or emergency air systems. The A-C inverter output is not monitored by meters in the control room, but it is alarmed on the plant annunciator.

20. Not needed if effluent discharges through common plant vent.

21. Vent flow monitor is Category 3 since it is in a non-harsh environment location. The flow rate to the radiation monitors is automatically controlled by a flow control valve. This flow to the radiation monitors is approximately isokinetic with the plant vent flow rate.

22. The particulate monitor has a range of 10^{-12} to 10^{-7} mCi/cc. The range of 10^{-3} to 10^{2} mCi/cc will be achieved through use of particulate filters installed on post-accident grab sampling equipment. The iodine monitor has a range of 10^{-7} to 10^{-2} mCi/cc. Additional range is provided by post-accident grab sampling equipment up to 10^{2} mCi/cc.

23. DC-1 does not have a portable gamma-ray spectrometer available for onsite analysis. A mobile laboratory with gamma spectroscopy equipment is available for environmental analysis.

24. Dissolved oxygen and pH sampling capabilities will be added for the primary coolant and sump. Oxygen sampling capabilities will be added for the containment air.