



SACRAMENTO MUNICIPAL UTILITY DISTRICT 6201 S Street, P.O. Box 15830, Sacramento CA 95852-1830, (916) 452-3211  
RJR 86-11 AN ELECTRIC SYSTEM SERVING THE HEART OF CALIFORNIA

January 13, 1986

DIRECTOR OF NUCLEAR REACTOR REGULATION  
ATTENTION FRANK J MIRAGLIA JR DIRECTOR  
PWR-B DIVISION  
U S NUCLEAR REGULATORY COMMISSION  
WASHINGTON D C 20555

DOCKET 50-312  
RANCHO SECO NUCLEAR GENERATING STATION  
UNIT NO 1  
REGULATORY GUIDE 1.97 REQUEST FOR ADDITIONAL INFORMATION

The District is enclosing in Attachment I its follow-up response to the NRC's request for additional information concerning conformance to Reg. Guide 1.97. The NRC sent this request based on an interim report prepared by its contractor, INEL, who reviewed the District's various Reg. Guide 1.97 submittals. The District submitted these reports on September 14, 1983, July 13, 1984, September 14, 1984, and July 9, 1985. Responses to 9 of the 11 questions were included in the District's October 31, 1985 submittal. Two questions were deferred pending the B&W Owner's Group R.G. 1.97 Task Force's generic position. This submittal responds to the remaining two questions.

To facilitate the review of the information in Attachment I, the District has included in Attachment II, revisions to it's September 14, 1984 Reg. Guide 1.97 report. Attachment II consists of replacement pages with revision change bars (REV. 3) in the margin. All scheduler revisions will follow the District's Living Schedule procedures.

If you have any questions, please contact Jerry Delezenski at Rancho Seco.

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## 1. Pressurizer Level

### Request:

"Pressurizer Level -- the license should supply additional analyses to support the deviation from the recommended range."

### Response:

The range of indicated liquid level in the pressurizer is limited by the location of the upper and lower pressure taps to 320" (or 72% of the straight side height). For anticipated transients such as decreasing feedwater temperature, excessive main feedwater flow, loss of main feedwater flow, decreasing steam flow, small steam leaks, loss of external load, loss of off-site power, loss of condenser vacuum and small steam generator tube leaks, the existing ranges for the pressurizer level are sufficient such that indicated level should remain on-scale.

For severe transients (accidents) such as steam line break, steam generator tube rupture and many small break LOCAs, the pressurizer voids. Following SFAS actuation of the HPI system, actions can be taken as necessary to stabilize the plant. Those actions are based on subcooling margin and RCS pressure, not pressurizer level. For the case of a total loss of feedwater, the pressurizer will go solid unless either main or auxiliary feedwater is restored to the steam generators within about 15 minutes. Actions taken are dependent on when feedwater is restored, subcooling margin and RCS pressure, not pressurizer level.

In general, for severe transients or accidents the pressurizer will either void or go solid. A voided pressurizer will cause indicated level to go off-scale low followed by a rapid decrease in RCS pressure to saturation. A solid pressurizer will cause indicated level to go off-scale high accompanied by high RCS pressure, possible large and rapid changes in RCS pressure, PORV and pressurizer safety valve actuation. All of these indications are available in the control room.

Based on this information the existing ranges of pressurizer level indication are sufficient for anticipated transients. For severe transients or accidents, indicated pressurizer level will go off-scale high or low due to the pressurizer going solid or voiding and, as a result, top to bottom instruments would provide no significant additional information. In these cases, subcooling margin, RCS pressure, PORV status and pressurizer safety valve status are monitored to determine actions to be taken. (This is consistent with the B&WOG Reg. Guide 1.97 task force's generic position.)



## 2. Pressurizer Heater Status

### Request:

"Pressurizer heater status -- the licensee should provide the instrumentation recommended by Regulatory Guide 1.97."

### Response:

The District will provide current indication for pressurizer emergency heaters for Cycle 9 startup. The District's Living Schedule will reflect this addition.

Var. No.	Variable Per R.G. 1.97 Rev. 3	SMUD Tag Nos.	SMUD Cat.	Computer Display	NRC Range	SMUD Range	Comments
<u>TYPE D VARIABLES Cont'd.</u>							
45	Pressurizer Heater Status (Category 2)	MCC S2A2 MCC S2B2	2	IDADS	Electric Current	Comply	Living Schedule   
46	Quench Tank Level (Category 3)	LT-21905	3		Top to Bottom (0-23'5")	0-10 ft. Upper Half See Note 46	
47	Quench Tank Temperature (Category 3)	TE-21801	3		50° to 750°F	50°F to 600°F See Note 47	Living Schedule   
48	Quench Tank Pressure (Category 3)	PT-21920	3		0 to design pressure (235 psig)	0-200 psig See Note 48	
49	Steam Generator Level (Category 1)	LT-20507 A,B LT-20508 A,B	1	SPDS IDADS	From tube Sheet to Separators	6-619" See Note 49	Living Schedule Same as Variable 4
50	Steam Generator Pressure (Category 2)	PT-20544 A,B PT-20545 A,B	1	SPDS IDADS	From ATM pressure to 20% above lowest safety valve setting	0-1200 psig See Note 50	Living Schedule Same as Variable 5
51	Safety Relief Valve Position (Category 2)	XE-20533 XE-20534 XE-20544 to 20559 XE-20571 A,B,C XE-20562 A,B,C	N/A See Note 51	IDADS	Closed/ Not Closed	Open/Not Open See Note 51	

Variable	Explanation
43	<p>Each valve is monitored by two acoustic steam flow detectors. Indication in the control room is labeled Valve Open/Not Open.</p> <p>The acoustic detection system does not monitor valve position directly. However, it is reliable and has been accepted for this use at Rancho Seco by the NRC for NUREG 0737 (accepted by the NRC in the letter dated 5/1/80, Reid to Mattimoe).</p>
44	<p>The range of indicated liquid level in the pressurizer is limited by the location of the upper and lower pressure taps to 320" (or 72% of the straight side height). For anticipated transients such as decreasing feedwater temperature, excessive main feedwater flow, loss of main feedwater flow, decreasing steam flow, small steam leaks, loss of external load, loss of off-site power, loss of condenser vacuum and small steam generator tube leaks, the existing ranges for the pressurizer level are sufficient such that indicated level should remain on-scale.</p> <p>For severe transients (accidents) such as steam line break, steam generator tube rupture and many small break LOCAs, the pressurizer voids. Following SFAS actuation of the PPI system, actions can be taken as necessary to stabilize the plant. Those actions are based on subcooling margin and RCS pressure, not pressurizer level. For the case of a total loss of feedwater, the pressurizer will go solid unless either main or auxiliary feedwater is restored to the steam generators within about 15 minutes. Actions taken are dependent on when feedwater is restored, subcooling margin and RCS pressure, not pressurizer level.</p> <p>In general, for severe transients or accidents the pressurizer will either void or go solid. A voided pressurizer will cause indicated level to go off-scale low followed by a rapid decrease in RCS pressure to saturation. A solid pressurizer will cause indicated level to go off-scale high accompanied by high RCS pressure, possible large and rapid changes in RCS pressure, PORV and pressurizer safety valve actuation. All of these indications are available in the control room.</p> <p>Based on this information the existing ranges of pressurizer level indication are sufficient for anticipated transients. For severe transients or accidents, indicated pressurizer level will go off-scale high or low due to the pressurizer going solid or voiding and, as a result, top to bottom instruments would provide no significant additional information. In these cases, subcooling margin, RCS pressure, PORV status and pressurizer safety valve status are monitored to determine actions to be taken. (This is consistent with the B&amp;WOG Reg. Guide 1.97 task force's generic position.)</p>



- 46 The Pressurizer Relief Tank (Quench Tank) at Rancho Seco is a vertical, cylindrical tank with a straight shell height of 17'-7". The 10' range of level indication covers fully the upper 62% of shell height. Normal water level is greater than 50% on the indicated range. Quench Tank level is useful as a backup indication of RCS inventory discharge through the Pressurizer Relief valves. Since the effect on liquid level due to discharge to the Quench Tank is to increase the level, the indicated range covers fully the range which could be of use to the operator in post accident scenarios.