

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Rancho Seco Nuclear Generating Station										DOCKET NUMBER (2) 0 5 0 0 0 3 1 2 1 OF 0 3													
TITLE (4) Potential Trip of Nuclear Service Cooling Water Pumps Due to Design Deficiency																							
EVENT DATE (5)						LER NUMBER (6)				REPORT DATE (7)						OTHER FACILITIES INVOLVED (8)							
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES None						DOCKET NUMBER(S) 0 5 0 0 0								
1	0	2	6	8	7	8	7	0	4	1	0	0	1	1	2	4	8	7	0	5	0	0	0
OPERATING MODE (9) N		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)																					
POWER LEVEL (10) 0 0 0 0		20.402(b)				20.405(c)				50.73(e)(2)(iv)				73.71(b)									
		20.405(a)(1)(i)				50.36(e)(1)				X 50.73(e)(2)(v)				73.71(e)									
		20.405(a)(1)(ii)				50.36(e)(2)				50.73(e)(2)(vii)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)									
		20.405(a)(1)(iii)				50.73(e)(2)(i)				50.73(e)(2)(viii)(A)													
		20.405(a)(1)(iv)				50.73(e)(2)(ii)				50.73(e)(2)(viii)(B)													
		20.405(a)(1)(v)				50.73(e)(2)(iii)				50.73(e)(2)(ix)													
LICENSEE CONTACT FOR THIS LER (12)																							
NAME Paul Lavelly, Supervisor, Independent Investigation/Reviews										TELEPHONE NUMBER 9 1 6 4 5 2 - 3 2 1 1													
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																							
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC				
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)				MONTH DAY YEAR									
YES (If yes, complete EXPECTED SUBMISSION DATE)										X NO													

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

A design review of the Nuclear Service Cooling Water System (NSCW) revealed Class 2 level switches in the control circuitry for the two redundant NSCW pumps. These pumps draw suction flow from their respective NSCW surge tanks. The switches are designed to trip the NSCW pumps on low NSCW surge tank level. The level switches do not have Safety Features Actuation Signal (SFAS) override, thus allowing a switch failure to prevent the pump from starting on SFAS signal.

During a seismic event, it is possible for both level switches to trip their respective NSCW pumps. A trip of the NSCW pumps would constitute a condition that alone could prevent the fulfillment of the safety function of a system needed to remove residual heat or mitigate the consequences of an accident. This event is reportable to the NRC in accordance with 10 CFR 50.73(a)(v)(B) and 10 CFR 50.73(a)(v)(D).

8712010243 871124
PDR ADOCK 05000312
S PDR

IE22.1

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Rancho Seco Nuclear Generating Station	0500031287	04	1	0	02	OF 03

If more space is required, use additional NRC Form 308A's (17)

Problem Description

As part of the Rancho Seco restart effort, an Expanded Augmented Systems Review and Test Program (EAS RTP) was initiated to review 33 selected systems to ensure proper system function during plant operation. A review of the Nuclear Service Cooling Water System (NSCW) raised concerns about the design adequacy of the electrical trip circuitry for the two redundant NSCW pumps.

The initial concern was of a postulated event in which the pumps fail to start on a Safety Features Actuation Signal (SFAS). In accordance with system design, each NSCW pump draws suction flow from its respective NSCW surge tank. If the surge tank level is insufficient, the associated pump would have inadequate net positive suction head and could suffer cavitation damage. To prevent this, the control circuitry includes a level switch that will trip the pump on low surge tank level. The level switch does not have an SFAS override, thus allowing a switch failure to prevent the pump from starting on an SFAS signal.

During subsequent review by NRC of this concern, it was observed that both level switches are Class 2. The District analyzed the switches and concluded they are not seismically qualified. During a seismic event, it is possible for the level switches to trip their respective NSCW pumps. This would constitute a condition that alone could prevent the fulfillment of the safety function of a system that is needed to remove residual heat or mitigate the consequences of an accident. This condition is reportable to the NRC in accordance with 10 CFR 50.73(a)(v)(B) and 10 CFR 50.73(a)(v)(D).

Plant Operating Conditions Before the Event

The pump control circuitry was installed prior to commercial operation in 1975. Since 1975, the plant has been in all operational modes.

Cause

This LER will be reviewed by the Incident Investigation/Reviews Group. The LER will be updated as required based on the results of this investigation.

The Energy Industry Identification System (EIIS) Component and System Identifier

The EIIS identifier for the NSCW is CC. The EIIS component identifier for pumps is P. The EIIS component identifier for level switches is LS.

The Manufacturer and Model Number of Each Component

The level switches are manufactured by Robertshaw Controls Company and are model number SL-326-E7-S.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (5)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Rancho Seco Nuclear Generating Station	05000312	87	041	000	3	OF 3

TEXT (If more space is required, use additional NRC Form 366A's) (17)

Method of Discovery

The NSCW circuitry problem was discovered by the review teams working within the EAS RTP. These teams have been conducting similar reviews on 33 selected systems important to the safe operation of Rancho Seco. The reviews are intended to ensure that other design deficiencies of this nature are discovered and corrected.

Corrective Actions

The pump circuitry will be modified to remove the surge tank low level trip switches. This will allow the pumps to run on an SFAS initiation signal. The surge tank low level switches will give alarm indication only.

Alarm procedures for annunciators H25FA window 17, NS CLG WTR SURGE TK A LVL LO-LO, and H25FB window 17, NS CLG WTR SURGE TK B LVL LO-LO, will be revised. The revised procedures will provide instructions for operator manual actions in the event of a surge tank low level.

Previous Similar Events

None



SMUD

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

GCA 87-750

NOV 24 1987

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Docket No. 50-312
Rancho Seco Nuclear Generating Station
License No. DPR-54
LICENSEE EVENT REPORT 87-041, REVISION 0: POTENTIAL TRIP OF NUCLEAR SERVICE
COOLING WATER PUMPS DUE TO DESIGN DEFICIENCY

Dear Sirs:

In accordance with the requirements of 10 CFR Part 50.73(a)(v)(B) and 10 CFR Part 50.73(a)(v)(D) the Sacramento Municipal Utility District hereby submits Licensee Event Report 87-041.

Please contact me if you have any questions. Members of your staff with questions requiring additional information or clarification may contact Mr. Paul Lavelly at (916) 452-3211, extension 4674.

Sincerely,

G. Carl Andognini
Chief Executive Officer,
Nuclear

Attachment

cc w/atch:

G. Kalman, NRC, Bethesda (2)
A. D'Angelo, NRC, Rancho Seco
J. B. Martin (2)
INPO

IE22
1/1