

*Southern California Edison Company*

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March 24, 1980

U. S. Nuclear Regulatory Commission  
Region V  
Office of Inspection and Enforcement  
Walnut Creek Plaza, Suite 202  
1990 North California Boulevard  
Walnut Creek, California 94596

Attention: Mr. R. H. Engelken, Director

Dear Sir:

Docket No. 50-206  
San Onofre - Unit 1

This letter describes a reportable occurrence involving certain components in the salt water cooling system which are required to be operable under San Onofre Unit 1 Technical Specification 3.3.1. Submittal is in accordance with the reporting requirements of Technical Specification 6.9.2.a.

At 2115 hours on March 10, 1980 with the unit operating at 100 percent power and with the south salt water cooling pump (G-13B) in operation, salt water cooling pump low flow and low discharge pressure alarms were received on the main control room auxiliary board annunciator panel. Concurrently, the north salt water cooling pump (G-13A) automatically started due to low pressure in the discharge line of south pump G-13B and pump G-13B motor amperage was observed to be indicating low.

Operators were then dispatched to the salt water cooling pump area and reported that both pumps were running with discharge pressures of 0 and 40 psig indicated at the south (G-13B) and north (G-13A) pumps, respectively. The operators further reported that the pneumatically operated discharge valves (POV's 5 and 6) of each pump were in the closed position. Under the conditions observed, POV-5 (discharge of north pump G-13A) should have been open while POV-6 (discharge of south pump G-13B) should have been closed. Efforts were then initiated to open POV-5.

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At 2120 hours, the auxiliary salt water cooling pump, G-13C, was manually started from the control room. However, a low flow condition as indicated by low pump motor amperage was observed. Investigation of the auxiliary pump and piping system indicated that the low flow condition was due to apparent insufficient pump priming and the auxiliary pump was then stopped. In order to re-establish salt water cooling flow, the screen wash pumps were started from the local panel and valves manually aligned to discharge to the bottom component cooling water heat exchanger, E-20B, normally served by the north salt water pump, G-13A. At 2130 hours, salt water cooling flow to E-20B was observed to be about 2000 gpm and component cooling water temperature exiting E-20B was decreasing, having reached a peak value of 82°F.

At 2156 hours, adequate priming was restored to the auxiliary salt water pump, G-13C, and the pump was placed in service.

During the period described above, a limiting condition for operation of Technical Specification 3.3.1.A was not met. Consistent with the requirement of the specification that the reactor shall not be maintained critical unless the specified limiting conditions are met, preparations were made to commence an orderly shutdown of the unit. However, at 2200 hours with the auxiliary salt water pump restored to operation and consistent with the provision of Technical Specification 3.3.1.B, the unit shutdown was terminated after a slight load reduction and full power operation was resumed while maintenance efforts to open POV-5 continued. At 0005 hours on March 11, 1980, POV-5 was opened and the north salt water pump G-13A placed in service. At 0010 hours, with the north salt water pump and the auxiliary pump determined to be operable, the auxiliary pump was stopped and unit operation proceeded in accordance with the limiting conditions for operation of Technical Specification 3.3.1.A.

Throughout the above incident, adequate cooling was maintained to equipment normally served by the component cooling water system during power operation. The peak component cooling water heat exchanger exit temperature of 82°F was well below the alarm condition setpoint of 97°F. Temperatures of pump bearings cooled by the component cooling water system were monitored during the incident and no significant changes observed.

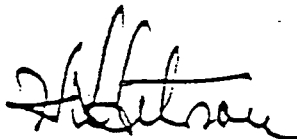
Investigations conducted to date have revealed that the south salt water cooling pump, G-13B, shaft failed due to apparent excessive vibration resulting from worn bearings. The pump shaft and bearings have since been repaired and the pump returned to service. The failure of POV-5 to open automatically and the problem of insufficient priming of auxiliary salt water pump G-13C are presently under investigation. Pending the results of these investigations and implementation of appropriate long term corrective actions to prevent recurrence, the following measures are being taken to assure availability of required salt water cooling: (1) POV-5 is being maintained open with the

north salt water pump running, and (2) the auxiliary salt water pump surveillance testing will be increased from once per week to once daily during low tide conditions. It is planned that long term corrective action to prevent recurrence will be identified and implemented during the forthcoming Cycle 8 refueling outage prior to returning San Onofre Unit 1 to service.

It was concluded that actions taken during this incident were consistent with the requirements of the San Onofre Unit 1 Technical Specifications and that plant conditions were maintained such that there was no effect on the public health and safety. An investigation is being carried out to review the adequacy of procedures governing operation of the salt water cooling system.

If you have any questions, please contact me.

Sincerely,



H. L. Ottosen  
Manager, Nuclear Generation

Attachment: Licensee Event Report 80-006

~~cc:~~ Director, Nuclear Reactor Regulation (40)  
Director, Office of Management Information & Program Control (3)  
Director, Nuclear Safety Analysis Center

LICENSEE EVENT REPORT

CONTROL BLOCK: \_\_\_\_\_ (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

01	C	A	S	O	S	1	0	0	-	0	0	0	0	0	0	-	0	0	3	4	1	1	1	1	4	5	
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LICENSEE CODE														LICENSE NUMBER						LICENSE TYPE JO				CAT 58			

01	L	0	5	0	0	0	2	0	6	7	0	3	1	0	8	0	8	0	3	2	4	8	0	9	
7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
REPORT SOURCE														DOCKET NUMBER				EVENT DATE				REPORT DATE			

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

02 | During normal operation, the south salt water cooling pump (SSWCP) discharge

03 | pressure dropped sharply. The north salt water cooling pump (NSWCP) automatically

04 | started on low pressure. However, its discharge POV failed to open. The

05 | auxiliary salt water cooling pump (ASWCP) was then started but flow could not be

06 | established. There was no effect on public health or safety.

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09	W	B	E	B	M	E	C	F	U	N	B	Z	
9	10	11	12	13	14	15	16	17	18	19	20	21	
SYSTEM CODE		CAUSE CODE		CAUSE SUBCODE		COMPONENT CODE				COMP. SUBCODE		VALVE SUBCODE	
17	8	0	0	0	6	0	1	T	0				
21	22	23	24	25	26	27	28	29	30				
LER NO REPORT NUMBER		EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE		REPORT TYPE					
33	34	35	36	37	38	39	40	41	42				
ACTION TAKEN		FUTURE ACTION		EFFECT ON PLANT		SHUTDOWN METHOD		ATTACHMENT SUBMITTED					
NPRD-4 FORM SUB.		PRIME COMP. SUPPLIER		REVISION NO.		COMPONENT MANUFACTURER							
X		A		Z		Z		Y					
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CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

10 | As a result of (1) excessive vibration, the shaft of the (SSWCP) sheared;

11 | (2) mechanical failure, the (NSWCP) POV did not open; (3) apparent inadequate

12 | prime, the (ASWCP) lost suction. The POV on the (NSWCP) was manually opened

13 | and the (ASWCP) regained suction. Design of the POV and (ASWCP) is under

14 | investigation. Shaft of (SSWCP) being replaced.

15	E	1	0	0	N.A.	A	2	alarms		
7	8	9	10	11	12	13	14	15		
FACILITY STATUS		% POWER			OTHER STATUS		METHOD OF DISCOVERY		DISCOVERY DESCRIPTION	
16	Z	Z	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.		
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ACTIVITY CONTENT RELEASED		AMOUNT OF ACTIVITY			LOCATION OF RELEASE					
PERSONNEL EXPOSURES		PERSONNEL INJURIES		LOSS OF OR DAMAGE TO FACILITY		PUBLICITY ISSUED				
0		0		0		0				
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### Loss of Salt Water Cooling System Pumps

On March 10, 1980, Southern California Edison Company, San Onofre Nuclear Generating Station - Unit 1, reported that for a period of approximately 41 minutes all of the Salt Water Cooling System (SWCS) pumps were out of service. The SWCS provides the ultimate heat sink for the Component Cooling Water System (CCWS) and other plant cooling water systems. Thus, in the event of a safety injection signal, the Emergency Core Cooling System could have been adversely affected by increasing cooling water temperatures.

The SWCS utilizes three pumps, a north, a south, and an auxiliary pump. The shaft of the south pump broke and the subsequent low discharge pressure automatically started the standby north pump. The north pump discharge valve failed to open and manual attempts to open the valve were unsuccessful. The auxiliary pump was manually started, but then manually stopped when a no flow condition developed due to an apparent loss of prime to the pump. In accordance with predetermined emergency procedures, the licensee manually cross-tied a screen wash pump (non-safety related) to the SWCS, providing approximately one-third the normal SWCS pump flow to the system until the auxiliary pump was returned to operation 41 minutes after initiation of the event.

During the time the SWCS pumps were out of service, the reactor continued to operate at full power. The temperature of the component cooling water being supplied to safety related components, during the period the SWCS pumps were out of service, increased from approximately 62 degrees F to a maximum of 82 degrees F which is well within operational limits.

This event involved a simultaneous failure of all of the redundant pumps in a safety related system. The initial phase of safety injection requires only a small percentage of the heat capacity of the SWCS, and the cooling water systems provide some heat capacity without the SWCS. Also, the systems may be supplied with coolant by the screen wash pumps which are powered off of the vital bus but require manual start and manual realignment of pertinent valves. Considering the duration of the event and use of a screen wash pump to supply coolant to the cooling water heat exchangers, no serious safety consequences resulted from the event. Nor was there a loss of plant capability to perform essential safety functions such that a potential release of radioactivity in excess of 10 CFR Part 100 guidelines could have resulted from a postulated transient or accident.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

APR 28 1980

MEMORANDUM FOR: Norman M. Haller, Director  
Office of Management and Program Analysis

FROM: Carl Michelson, Director  
Office for Analysis and Evaluation of  
Operational Data

SUBJECT: ABNORMAL OCCURRENCE REPORT TO CONGRESS  
FOR FIRST QUARTER CY 1980

In response to your memorandum of March 18, 1980, we have reviewed available LER information for the first quarter CY 1980 pertaining to the five requests in your memorandum.

With regard to request 1, we believe the following two events should be considered as potential abnormal occurrences:

1. On March 10, 1980, San Onofre Nuclear Generating Station, Unit 1, experienced an event which resulted in a total loss of heat sink for the component cooling water system for 41 minutes. Further, the loss of heat sink resulted from a simultaneous failure of both trains of a safety-related system. It appears, after review, that the preferred backup system (auxiliary salt water pump) was inoperable when called on to operate and is not qualified as safety-related (other possible backups were also unqualified as safety-related).

The component cooling water system supplies cooling for the reactor coolant pumps, RHR pump packing and bearings, charging pump oil coolers, and the RHR heat exchangers - certain equipment needed for core cooling during accident conditions. Because of the foregoing consideration, we believe the event qualifies as an abnormal occurrence since there was major degradation of essential safety-related equipment.

Further, we believe that this degradation of essential safety-related equipment was such that a potential release of radioactivity in excess of 10 CFR Part 100 guidelines could have resulted from a large break LOCA.

2. On March 6, 1980, the Tennessee Valley Authority announced that an investigation was taking place at Browns Ferry Nuclear Plant to determine the cause of several unexplained reactor trips that occurred during February of 1980. AEOD has learned through informal communication that these reactor trips may have resulted from purposeful acts on the part of TVA employees. If our understanding is correct and the acts were purposeful, we believe this series of events

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represent a potential breakdown of physical security that could have weakened the protection against sabotage at Browns Ferry. Please note that AEOD is not maintaining that sabotage occurred during these events since we have no evidence to conclude such a fact. We do recommend that further information be obtained concerning the facts associated with these events and a determination made whether the events represent a substantial breakdown of physical security that significantly weakened the protection against sabotage at Browns Ferry and, as such, constitute an abnormal occurrence.

Regarding request 2, we have no comment.

Regarding request 3, we recommend that the March 10, 1980 San Onofre event be classified as an abnormal occurrence (see item 1 above).

Regarding request 4, we have no comment.

If you have further questions, please contact Jim Creswell on x29560.



Carl Michelson, Director  
Office for Analysis and Evaluation  
of Operational Data