

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8805030524 DOC. DATE: 88/04/29 NOTARIZED: NO DOCKET #  
 FACIL: 50-361 San Onofre Nuclear Station, Unit 2, Southern California 05000361  
 AUTH. NAME AUTHOR AFFILIATION  
 MORGAN, H. E. Southern California Edison Co.  
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-008-00: on 880330, evaluation determined that component cooling water sys may have operated outside design basis for leakage prior to 1984 design mod. Caused by desing criteria being imposed after majority of const complete. W/880429 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 6  
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL		RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
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	AEOD/DOA	1 1		AEOD/DSP/NAS	1 1
	AEOD/DSP/ROAB	2 2		AEOD/DSP/TPAB	1 1
	ARM/DCTS/DAB	1 1		DEDRO	1 1
	NRR/DEST/ADS 7E	1 0		NRR/DEST/CEB 8H	1 1
	NRR/DEST/ESB 8D	1 1		NRR/DEST/ICSB 7	1 1
	NRR/DEST/MEB 9H	1 1		NRR/DEST/MTB 9H	1 1
	NRR/DEST/PSB 8D	1 1		NRR/DEST/RSB 8E	1 1
	NRR/DEST/SGB 8D	1 1		NRR/DLPQ/HFB 10	1 1
	NRR/DLPQ/QAB 10	1 1		NRR/DOEA/EAB 11	1 1
	NRR/DREP/RAB 10	1 1		NRR/DREP/RPB 10	2 2
	NRR/DRTS/SIB 9A	1 1		NRR/PMAS/ILRB12	1 1
	<u>REG FILE</u> 02	1 1		RES TELFORD, J	1 1
	RES/DE/EIB	1 1		RES/DRPS DIR	1 1
	RGN5 FILE 01	1 1			
EXTERNAL:	EG&G GROH, M	4 4		FORD BLDG HOY, A	1 1
	H ST LOBBY WARD	1 1		LPDR	1 1
	NRC PDR	1 1		NSIC HARRIS, J	1 1
	NSIC MAYS, G	1 1			

# LICENSEE EVENT REPORT (LER)

Facility Name (1) <b>SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 2</b>										Docket Number (2) <b>0   5   0   0   0   3   6   1</b>					Page (3) <b>1 of 0 5</b>							
Title (4) <b>COMPONENT COOLING WATER (CCW) SYSTEM LEAKAGE EXCEEDS DESIGN CRITERIA</b>																						
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				Docket Number(s)							
0 3	3 0	8 8	8 8	---	0   0   8	---	0   0	0 4	2 9	8 8	<b>SONGS, UNIT 3</b>				<b>0   5   0   0   0   3   6   2</b>							
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)																			
POWER LEVEL (10) <b>0   0   0</b> /////////////////////////////////// /////////////////////////////////// /////////////////////////////////// ///////////////////////////////////			<input type="checkbox"/> 20.402(b)					<input type="checkbox"/> 20.405(c)					<input type="checkbox"/> 50.73(a)(2)(iv)					<input type="checkbox"/> 73.71(b)				
			<input type="checkbox"/> 20.405(a)(1)(i)					<input type="checkbox"/> 50.36(c)(1)					<input type="checkbox"/> 50.73(a)(2)(v)					<input type="checkbox"/> 73.71(c)				
			<input type="checkbox"/> 20.405(a)(1)(ii)					<input type="checkbox"/> 50.36(c)(2)					<input type="checkbox"/> 50.73(a)(2)(vii)					<input type="checkbox"/> Other (Specify in Abstract below and in text)				
			<input type="checkbox"/> 20.405(a)(1)(iii)					<input type="checkbox"/> 50.73(a)(2)(i)					<input type="checkbox"/> 50.73(a)(2)(viii)(A)									
			<input type="checkbox"/> 20.405(a)(1)(iv)					<input checked="" type="checkbox"/> 50.73(a)(2)(ii)					<input type="checkbox"/> 50.73(a)(2)(viii)(B)									
<input type="checkbox"/> 20.405(a)(1)(v)					<input type="checkbox"/> 50.73(a)(2)(iii)					<input type="checkbox"/> 50.73(a)(2)(x)												
LICENSEE CONTACT FOR THIS LER (12)																						
Name <b>H. E. Morgan, Station Manager</b>										TELEPHONE NUMBER AREA CODE <b>7   1   4</b> <b>3   6   8</b> - <b>6   2   4</b>   <b>1</b>												
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																						
CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	////////	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	////////											
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SUPPLEMENTAL REPORT EXPECTED (14)												Expected Submission Date (15)		Month	Day	Year						
<input checked="" type="checkbox"/> Yes (If yes, complete EXPECTED SUBMISSION DATE) <input type="checkbox"/> NO														0 6	3 0	8 8						
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)																						

Following a design basis event, the Component Cooling Water (CCW) system must either 1) have a Seismic Category I makeup water source, or 2) be capable of operating without makeup for 7 days with provisions for supplying makeup water through temporary connections within 7 days. As indicated in response to FSAR question 010.49, which, as part of the FSAR, was accepted by the NRC during the licensing process, the CCW design leakage was analyzed to be sufficiently small to allow operation for 122 days without makeup; therefore, no seismically qualified makeup capability was provided. In 1983, it was recognized that the assumed design leakage was unrealistically low, and that the CCW system was not sufficiently leak-free to the degree necessary to meet this requirement. Consequently, a design modification was implemented in 1984 which provided the capability to supply makeup water from existing seismically qualified mobile tankers to the CCW surge tanks, and the FSAR was subsequently updated to reflect this change.

On 3/30/88, an evaluation of the CCW design criteria with respect to allowable system leakage rates was completed. From this evaluation and CCW operating history, it was determined that the system may have operated outside its design basis for leakage prior to the 1984 design modification. Because this condition was recognized in 1983, this LER is delinquent.

The design criteria regarding makeup requirements were imposed on the CCW system after the majority of its construction was completed and no provisions for meeting this criteria were established. The root cause evaluation of the event requires additional effort and is not yet complete. A supplemental LER, describing the cause of this event and corrective actions to be taken, will be submitted.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

SAN ONOFRE NUCLEAR GENERATION STATION UNIT 2	DOCKET NUMBER 05000361	LER NUMBER 88-008-00	PAGE 2 OF 5
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Plant: San Onofre Nuclear Generating Station (SONGS)  
Unit(s): 2 and 3  
Reactor Vendor: Combustion Engineering  
Event Date: March 30, 1988

A. PLANT CONDITIONS AT TIME OF THE EVENT:

Unit 2 was in Mode 5 (cold shutdown) and Unit 3 was operating in Mode 1 at 100% reactor power.

B. BACKGROUND INFORMATION:

The Component Cooling Water (CCW) System (EIIS System Code CC) has two redundant trains (critical loops) that supply cooling water to redundant trains of safety equipment needed for plant shutdown and emergency cooldown subsequent to the design basis event. A non-critical loop, which is aligned to either one of the two critical loops during normal operation, supplies cooling water to equipment and components for normal plant operation and for normal plant shutdown. Each CCW train contains a surge tank (EIIS Component Code TK) which has low level and low-low level setpoints. At the low level setpoint, the associated surge tank makeup supply valve from the Nuclear Service Water (NSW) System (non-safety related and non-seismically qualified) (EIIS System Code KG) automatically opens. At the low-low level setpoint, the non-critical loop isolation valves (EIIS Component Code ISV) and the surge tank block valve (EIIS Component Code SHV) automatically close.

Following a design basis event (earthquake or accident), the CCW system must meet one of two requirements regarding allowable system leakage: 1) the makeup water source to the CCW system must be Seismic Category I, or 2) the system must operate without makeup for 7 days with provisions for supplying makeup water through temporary connections within 7 days. As indicated in response to FSAR question 010.49, which, as part of the FSAR, was accepted by the NRC during the licensing process, the CCW design leakage was analyzed to be sufficiently small to allow operation for 122 days without makeup; therefore, no seismically qualified makeup capability was provided. Consequently, the only water inventory that could be credited post-event to offset CCW critical loop leakage was inventory from the CCW surge tank associated with that loop. To meet this design criteria, critical loop leakage must be less than or equal to .142 gpm. Due to system interfaces with multiple systems, there are no positive means for measuring integrated critical loop leak rates of this magnitude.

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C. DESCRIPTION OF THE EVENT:

1. Event:

In 1983, it was realized that the CCW leakage criteria (.142 gpm) was overly restrictive such that 1) the system could not have been practically maintained to ensure the criteria was met, and 2) minor leakage exceeding the criteria could not have been practically detected. In 1984, a design modification was implemented and appropriate operating instructions were revised which provided the capability to supply makeup water to the CCW surge tank from existing seismically qualified mobile fire tankers (EIIS Component Code TK)(EIIS System Code KP) (primary function is for fire suppression water supply). The FSAR was subsequently updated to reflect this design modification. Although no quantitative data exists which confirms that leakage was excessive, the design modification was installed to ensure that leakage would not adversely impact system operation.

During a recent evaluation for the relocation of the seismic mobile tankers, a review of CCW design criteria related to the tankers was performed. The evaluation determined that the compensatory measure using the seismic fire tankers is adequate to meet the design criteria of a seismically qualified makeup source. On March 30, 1988, an evaluation of the CCW design criteria with respect to allowable system leakage rates was completed. From this evaluation and CCW operating history, it was determined that the system may have operated outside its design basis for leakage prior to the 1984 design modifications and operating instruction revisions. Because this condition was recognized in 1983, this LER is delinquent.

2. Inoperable Structures, Systems or Components that Contributed to the Event:

None.

3. Sequence of Events:

Not applicable.

4. Method of Discovery:

During a recent evaluation for the relocation of the seismic mobile tankers, a review of CCW design criteria related to the tankers was performed. During this review, it became apparent that Units 2 and 3 may have operated outside the design basis of the CCW system prior to implementation of the design changes for makeup water capability in 1984.

5. Personnel Actions and Analysis of Actions:

Not applicable.

6. Safety System Responses:

Not applicable.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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D. CAUSE OF THE EVENT:

1. Immediate Cause:

The design criteria regarding makeup requirements were imposed on the CCW system after the majority of its construction was completed and no provisions for meeting this criteria were established.

2. Root Cause:

The root cause evaluation of the event requires additional effort and is not yet complete. A supplemental LER, describing the cause of this event and corrective actions to be taken, will be submitted.

E. CORRECTIVE ACTIONS:

1. Corrective Actions Taken:

- a. The capability to provide makeup water to the CCW system following design basis events was implemented in 1984 through design modifications and operating instruction revisions.

2. Planned Corrective Actions:

- a. As stated above, a supplemental LER, describing the cause of this event and corrective actions to be taken, will be submitted.
- b. Operator action to implement CCW makeup has been demonstrated to be acceptable. However, we are evaluating design alternatives for Seismic Category I makeup to the CCW system as an enhancement to long term operation of Units 2 and 3.

F. SAFETY SIGNIFICANCE OF THE EVENT:

For postulated Safe Shutdown Earthquake (SSE), Loss of Coolant Accident (LOCA) and High Energy Line Break (HELB) scenarios, it is assumed that the critical loop which is not supplying the non-critical loop fails and the remaining operating critical loop loses inventory due to a major break in the non-critical loop. The operating critical loop automatically isolates from the non-critical loop and the surge tank. If the leak rate of the critical loop were less than or equal to .142 gpm, there was no safety significance since there was adequate inventory for operators to reopen the surge tank isolation valve and operate the critical loop for 7 days without makeup water. However, if a leak rate greater than .142 gpm existed during the time in which no formal provisions were in place for providing makeup (prior to 1984), there would have been a loss of CCW safety function, and depending on the magnitude of the leakage, the ability to mitigate the consequences of postulated accidents could have been impaired.

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G. ADDITIONAL INFORMATION:

1. Component Failure Information:

Not applicable.

2. Previous LERs on Similar Events:

None.

3. Results of NPRDS Search:

Not applicable.

4. Administrative Failure Information:

Personnel involved with the identification of excessive leakage beyond the CCW leakage criteria in 1983 failed to initiate a Nonconformance Report (NCR) contrary to administrative procedures. The NCR process provides the mechanism for ensuring that a reportability evaluation is performed for such conditions. Consequently, NRC notification pursuant to 10 CFR 50.72(b)(1)(ii) and reporting pursuant to 10 CFR 50.73(a)(2)(ii) was not accomplished. Between 1983 and the present, the NCR process has been strengthened to ensure that conditions such as described in the LER are properly addressed. Through experience, continuing use of the NCR process, and, to some degree, formal training, personnel in various organizations involved with design review as well as with design modification implementation better recognize the need to initiate NCRs when discrepancies with existing design criteria are identified. Additionally, administrative procedures which involve the NCR process have been refined through normal review and revisions. It is believed that this maturation process has resulted in an effective NCR/reportability system and no further corrective actions are warranted at this time.



**Southern California Edison Company**

SAN ONOFRE NUCLEAR GENERATING STATION

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H. E. MORGAN  
STATION MANAGER

April 29, 1988

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U. S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

Subject: Docket No. 50-361  
30-Day Report  
Licensee Event Report No. 88-008  
San Onofre Nuclear Generating Station, Unit 2

Pursuant to 10 CFR 50.73(a)(2)(ii), this submittal provides the required 30-day written Licensee Event Report (LER) for an occurrence involving the Component Cooling Water (CCW) Systems in Units 2 and 3. Since this occurrence involves similar systems, cause, and corrective actions applicable to Units 2 and 3, a single report for Unit 2 is being submitted in accordance with NUREG-1022. Because this occurrence was initially identified in 1983, this LER is delinquent. Neither the health and safety of plant personnel nor the health and safety of the public was affected by this occurrence.

If you require any additional information, please so advise.

Sincerely,

*H. E. Morgan*

Enclosure: LER No. 88-008

cc: F. R. Huey (USNRC Senior Resident Inspector, Units 1, 2 and 3)  
J. B. Martin (Regional Administrator, USNRC Region V)  
Institute of Nuclear Power Operations (INPO)

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