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December 26, 1995

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

Subject: Docket Nos. 50-361 and 50-362
30-Day Report
Licensee Event Report No. 95-016
San Onofre Nuclear Generating Station, Units 2 and 3

Pursuant to 10 CFR 50.73(d), this submittal provides the required 30-day written Licensee Event Report (LER) for an omission in a high energy line break analysis for Units 2 and 3. Since this condition 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. Neither the health nor the safety of plant personnel or the public was affected by this condition.

If you require any additional information, please so advise.

Sincerely,

RWKrieger

Enclosure: LER No. 2-95-016

cc: L. J. Callan, Regional Administrator, NRC Region IV
T. P. Gwynn, Director, Division of Reactor Projects, Region IV
J. E. Dyer, Director, Division of Reactor Projects, Region IV
K. E. Perkins, Jr., Director, Walnut Creek Field Office, NRC Region IV
J. Sloan (USNRC Senior Resident Inspector, Units 1, 2 and 3)
M. B. Fields, NRC Project Manager, San Onofre Units 2 & 3
Institute of Nuclear Power Operations (INPO)

LICENSEE EVENT REPORT (LER)

Facility Name (1)	Docket Number (2)	Page (3)
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 2	0 5 0 0 0 3 6 1	1 of 0 3

Title (4)

Original Plant Architect/Engineer HELB Analysis Omission

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)
1 1	2 7	9 5	9 5	0 1 6	0 0	1 2	2 6	9 5	SONGS Unit 3	0 5 0 0 0 3 6 2
										0 5 0 0 0

OPERATING MODE (9): 1

POWER LEVEL (10): 1 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)

20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
20.405(a)(1)(i)	50.36(c)(1)	XX 50.73(a)(2)(v)	73.71(c)
20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	Other (Specify in Abstract below and in text)
20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

Name	TELEPHONE NUMBER
R. W. Krieger, Vice President, Nuclear Generation	AREA CODE 7 1 4 3 6 8 - 6 2 5 5

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

SUPPLEMENTAL REPORT EXPECTED (14)

		Expected Submission Date (15)	Month	Day	Year
Yes (If yes, complete EXPECTED SUBMISSION DATE)	XX NO				

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

On 11/27/95, a preliminary engineering review of potential interactions between emergency core cooling system (ECCS) components and steam which could be released from hypothesized high energy line breaks (HELBs) concluded that steam released from a rupture of one of these systems could have travelled through ventilation systems to ECCS and other safe shutdown system components, potentially creating a harsh environment for which some components were not designed to operate. Edison conservatively assumed that non-qualified components would not operate in a steam environment. This LER provides the written report required by 10CFR50.73(a)(2)(v).

Edison discovered these HELB interactions during the ongoing development of a long-term plant barrier control program. This situation occurred because the original UFSAR HELB analysis completed by the plant architect/engineer (A/E) apparently did not consider the potential for steam to travel through ventilation ducting to non-qualified components. The analysis was consistent with NRC guidance, which did not require consideration of interactions with nonsafety-related components. Because ventilation ducting is nonsafety-related, the A/E apparently did not consider the environmental conditions that could result from steam propagation through nonsafety-related ventilation systems.

Edison promptly initiated interim compensatory measures to ensure operability of affected components, and is conducting a more extensive design effort to determine long-term compensatory measures.

DESCRIPTION OF THE EVENT:

Plant:	San Onofre Nuclear Generating Station (SONGS)
Units:	Two and Three
Reactor Vendor:	Combustion Engineering
Event Date:	November 27, 1995
Mode:	both Units were in Mode 1
Power:	both Units were at 100% power

On November 27, 1995, Edison completed a preliminary engineering review of potential interactions between emergency core cooling system (ECCS) components and the steam which could be released from hypothesized high energy line breaks (HELBs) in the Main Steam [SB], Auxiliary Steam [SA] and Feed Water [SJ] Systems. The review concluded that steam released into the Turbine Building [NM] from a rupture of one of these nonsafety-related, non-seismic systems could have travelled through the ventilation systems [VF] [VI] into the buildings [NA] [NF] housing ECCS and other safe shutdown system components, potentially creating a harsh environment for which some components were not designed to operate. Edison considers, however, that such pipe breaks are unlikely given the inherently conservative design and past industry experience with systems designed to American National Standards Institute standards.

In cases where Edison was unable to immediately confirm environmental qualifications for affected components, Edison conservatively assumed that non-qualified components would not operate in a steam environment. Therefore, Edison conservatively concluded that this unevaluated condition could represent a condition that alone could prevent the fulfillment of the safety function of systems that are needed to mitigate the consequences of an accident. Edison provided a non-emergency four-hour report on 11/27/95 (NRC Operations Log #29647). This LER provides the written report required by 10CFR50.73(a)(2)(v).

Edison engineers discovered these HELB interactions during the ongoing evaluation of plant barriers (for protection against steam, flooding, radiation, missiles, unauthorized/undetected access, and fire) for development of a long-term barrier control program. Edison had initiated long-term barrier control program development as a result of flooding barrier problems previously reported in LER 2-93-009.

Edison's review to date indicates the following ECCS and safe shutdown system components are affected:

Components within the Control Room [NA], the Cable Riser/Spreading area and the Communications Equipment Room;

The two emergency chillers [KM], [CHU](shared between Units);

4 KV manual transfer switches for the swing (third of a kind) high pressure safety injection pumps [BQ], [P] (one each for Units 2 and 3); and

4 KV manual transfer switches for the swing component cooling water pumps [CC], [P] (one each for Units 2 and 3).

CAUSE OF THE EVENT:

This situation occurred because the original (1972-1980) UFSAR Section 3.6A HELB analysis completed by the plant architect/engineer (A/E), Bechtel Power Corporation, did not appear to consider the potential for steam to travel through ventilation ducting to non-qualified components. Bechtel's analysis was consistent with NRC Standard Review Plan (SRP) guidance, which was completed circa 1978-80. The NRC guidance did not require consideration of interactions with nonsafety-related components. Because

ventilation ducting is nonsafety-related, the plant A/E apparently did not consider the environmental conditions that could result from steam propagation through nonsafety-related ventilation systems. This omission was not identified during projects such as the design basis documentation reconstitution program.

CORRECTIVE ACTIONS:

Edison promptly initiated interim compensatory measures (i.e., closing fire dampers, operator instructions, etc.) to ensure operability of affected components in the unlikely event of a HELB in the Turbine Building. Edison is conducting a more extensive design effort to determine long-term compensatory measures.

SAFETY SIGNIFICANCE OF THE EVENT:

With respect to design basis assumptions, the consequences of the HELB interactions described above are not acceptable.

However, Edison's preliminary best estimate evaluation indicates that this condition increased the likelihood of core damage by less than 1E-6/year per unit. This relatively low frequency is attributable to a low predicted pipe break frequency based on industry experience, seismically rugged piping and supports, proceduralized actions to compensate for loss of both chillers, and a reliable Auxiliary Feed Water system.

Given the low likelihood of core damage, Edison has concluded that the safety significance of this condition was low.

ADDITIONAL INFORMATION:

In the past three years, Edison reported the following instances where the A/E or nuclear steam supply system vendor erred in original plant analyses:

1. LER 2-93-006 voluntarily reported that the plant A/E tornado-missile barrier design satisfied NRC criteria but was not accurately reflected in the plant licensing basis.

2. LER 2-93-007 reported that the nuclear steam supply system vendor, Combustion Engineering, erred when entering into a computer model a value for the thickness of paint on components inside containment. When this error was corrected, the calculated peak fuel cladding temperature for the Large Break Loss of Coolant Accident increased.

3. LER 2-93-012 reported the original electrical distribution system design by the plant A/E may not have been adequate to ensure automatic component actuation under worst case post-accident loading conditions concurrent with minimum switchyard voltage.

In none of the above instances was it possible to determine the cause of the analysis flaw due to the length of time that had elapsed between development of the initial design and discovery of the condition. Because the cause of the event reported herein was related to HELB analysis and environmental qualification, a cause not present in these other instances, corrective actions for the previous reports could not be expected to have prevented this situation.