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ACCESSION NBR:8903030264 DOC.DATE: 89/02/15 NOTARIZED: NO DOCKET #
 FACIL:50-316 Donald C. Cook Nuclear Power Plant, Unit 2, Indiana & 05000316
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SUBJECT: LER 89-002-00:on 890116,non-svc induced deformation of ECCS
 suction line seismic restraint.

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) D. C. Cook Nuclear Plant - Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 3 1 6				PAGE (3) 1 OF 0 5		
TITLE (4) Non-Service Induced Deformation of Emergency Core Cooling System Suction Line Seismic Restraint																
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 1	1 6	8 9	8 9	0 0 2	0 0	0 2	1 5	8 9					0 5 0 0 0			
OPERATING MODE (9) 6		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)														
POWER LEVEL (10) 0 0 0		20.402(b)				20.405(c)				60.73(a)(2)(iv)				73.71(b)		
		20.405(a)(1)(i)				60.36(c)(1)				60.73(a)(2)(v)				73.71(c)		
		20.405(a)(1)(ii)				60.36(c)(2)				60.73(a)(2)(vii)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)		
		20.405(a)(1)(iii)				60.73(a)(2)(i)				60.73(a)(2)(viii)(A)						
		20.405(a)(1)(iv)				60.73(a)(2)(ii)				60.73(a)(2)(viii)(B)						
		20.405(a)(1)(v)				60.73(a)(2)(iii)				60.73(a)(2)(ix)						
LICENSEE CONTACT FOR THIS LER (12)																
NAME T. K. Postlewait - Technical Engineering Superintendent										TELEPHONE NUMBER						
										AREA CODE 6 1 6		4 6 5 - 5 9 0 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						
SUPPLEMENTAL REPORT EXPECTED (14)																
<input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)										<input type="checkbox"/> NO		EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
														0 4	0 7	8 9

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

On August 17, 1988 with Unit 2 in Mode 6 (Refueling) during a walkdown of Inservice Inspection pipe supports, a seismic restraint was identified to have significant deformation. The restraint is located on the 24 inch Emergency Core Cooling System suction line from the Unit 2 Refueling Water Storage Tank. Subsequent evaluation on January 16, 1989, determined that the suction line stresses would have exceeded the FSAR criteria under design basis seismic conditions. The investigation determined that it was highly unlikely that the damage was service related. Modifications had been made to the piping to allow the pipe to be replaced with a spool piece to facilitate flushing and other startup activities. The deformation most likely occurred during the removal and reinstallation of the piping during or following startup activities. The restraint has been repaired and returned to an acceptable design condition.

Subsequent walkdown of the subject piping system revealed additional as-built/design inconsistencies on two adjacent supports. A detailed engineering analysis is being performed to determine what the effects of a Design Basis Earthquake would have been on the subject piping system, had it occurred based on the subsequent inconsistencies identified on the two adjacent supports. A supplemental report will be submitted by April 7, 1989.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) D. C. Cook Nuclear Plant - Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 3 1 6 8 9 - 0 0 2 - 0 0 0 2 OF 0 5	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			

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

Conditions Prior to Occurrence

Unit 2 in Mode 6 (Refueling - no fuel in the core).

Description of Event

On August 17, 1988, at 0800 hours, during a walkdown of Inservice Inspection (ISI) pipe supports (EIIS/SPT) on Unit 2, it was identified that restraint 2-GSI-L102 was deformed. The restraint is located on the twenty-four inch Emergency Core Cooling System (ECCS) suction line (EIIS/BQ-PSP) just downstream of the Unit 2 Refueling Water Storage Tank (RWST) (EIIS/CB-TK). Subsequent evaluation of the restraint's condition on January 16, 1989, determined that the Unit 2 ECCS suction line stresses would have exceeded the FSAR Criteria under design basis seismic conditions.

The deformation of the restraint was identified as deformation of the I-beam attached to the wall, along with deformation of two stanchions attached to the suction pipe (see ATTACHMENT 1). The deformation caused significant increases in the gap between the I-beam and the stanchions. Examination of the ECCS piping itself revealed no damage. The original seismic design required a one-sixteenth inch gap on each side. The gaps found from the deformation ranged from one-half to one and one-quarter inches. The design of the restraint is for seismic considerations and by definition is exempt from ISI visual examination per ASME Section XI. The restraint carries no load during normal plant operation in any plane. The purpose of the restraint is to limit horizontal movement of the suction line during a seismic event.

The ECCS suction line piping was walked down and adjacent hangers and supports were inspected. Two supports, 2GSI-L106 and 2GSI-104, were identified as possibly not being installed in accordance with plant design. The walkdown, however, did not reveal any noticeable deformation, damage, significant pipe movement or other evidence of service induced abnormalities.

On November 1, 1988 and February 10, 1989, respectively, it was determined that the as-built condition of the subject additional hangers were not in accordance with plant design.

Cause of Event

The investigation concluded that it is highly unlikely that the deformation of 2GSI-L102 was service induced as there have been no recorded unusual operating conditions, including a Design Basis Earthquake, which could have resulted in such significant deformation. The location of the restraint, on the suction side of the ECCS pumps, supports the likelihood that this type of deformation did not occur during service.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) D. C. Cook Nuclear Plant - Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 3 1 6	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 9	— 0 0 2	— 0 0	0 3	OF	0 5

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Cause of Event (continued)

A review of modifications made to the system identified one potential cause for the deformation of 2GSI-L102. In order to facilitate flushing and other startup activities prior to initial unit startup a modification was made to the system, (changing this section of piping to a spool piece) to allow this portion of piping to be removed and replaced with a "jumper" spool piece. The modification, performed in 1976, was completed with one minor change to the original design; ie, the subject restraint was moved to prevent interference with newly installed flanges. No other problems were noted. A Quality Control inspection report from August 1977 noted no problems with the restraint. The startup activities removed the modified pipe section and replaced it with a spool piece connecting the ECCS pump suction to the Condensate Storage Tank (CST) (see ATTACHMENT 1). Upon completion of the startup activities, the piping was restored. It is believed that the deformation of the restraint occurred during this evolution; however, no documentation of such deformation could be located. The corresponding restraint for Unit 1 was examined. There was no similar modification performed on Unit 1 and no deformation of the restraint was seen.

The investigation of 2GSI-L104 and 2GSI-L106 concluded that the inconsistencies with plant design were not service induced, but rather, the as-installed configuration.

Analysis of Event

This event is being reported per 10CFR50.73(a)(2)(11) as an event that resulted in the plant being in a condition that was outside the design basis of the plant. (Suction line stresses would have exceeded FSAR criteria under design basis seismic conditions).

The Donald C. Cook Nuclear Plant is located in a low seismicity area, and historically earthquakes have been of low intensity. To date, a seismic event of Design Basis Earthquake magnitude has not occurred at the Cook Nuclear Plant. Thus, the subject piping system has not been subjected to the Design Basis Earthquake loading. Review of the normal operating system loading indicated that the system was capable of supporting normal operating loads.

A detailed engineering analysis is being performed to determine what the effects of a Design Basis Earthquake would have been on the subject piping system, had it occurred based on the subsequent inconsistencies identified on 2GSI-L104 and 2GSI-L106.

A supplemental report will be submitted by April 7, 1989.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) D. C. Cook Nuclear Plant - Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 3 1 6	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 9	0 0 2	0 0	0 4	OF	0 5

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Corrective Actions

Due to the extent of the deformation of 2GSI-L102, it was not possible to return the restraint to its original design configuration. A revised design was developed to reinforce the restraint and reestablish the gap clearances specified by the original seismic design. A modification was initiated along with an ASME Section XI repair plan to repair the restraint. Repairs have been completed and the restraint visually inspected for final acceptance.

Regarding 2GSI-L104 and 2GSI-L106, corrective design has been issued and the supports will be returned to an acceptable configuration prior to return to service of the unit from the current outage.

Failed Component Identification

None

Previous Similar Events

None

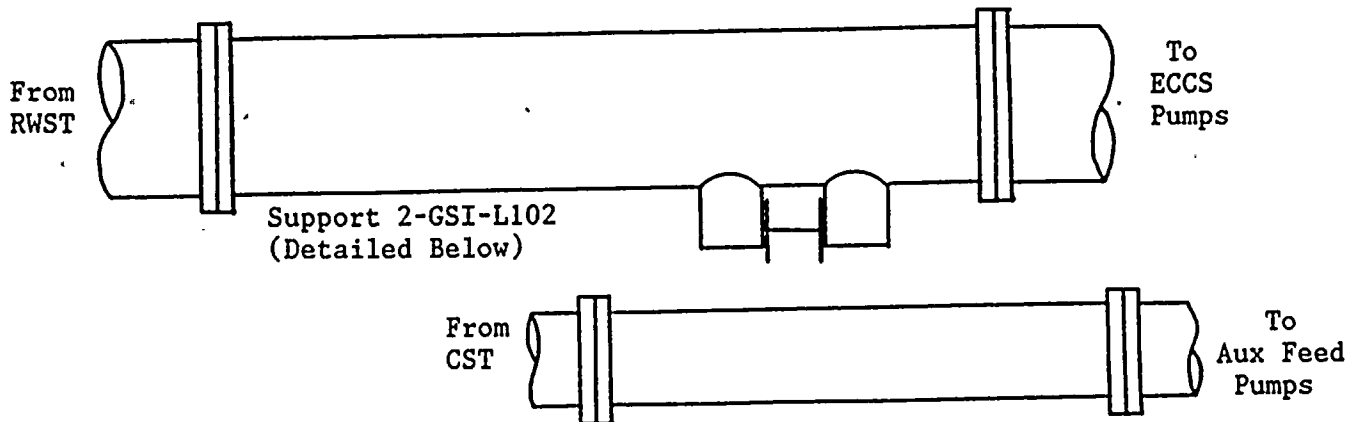
LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
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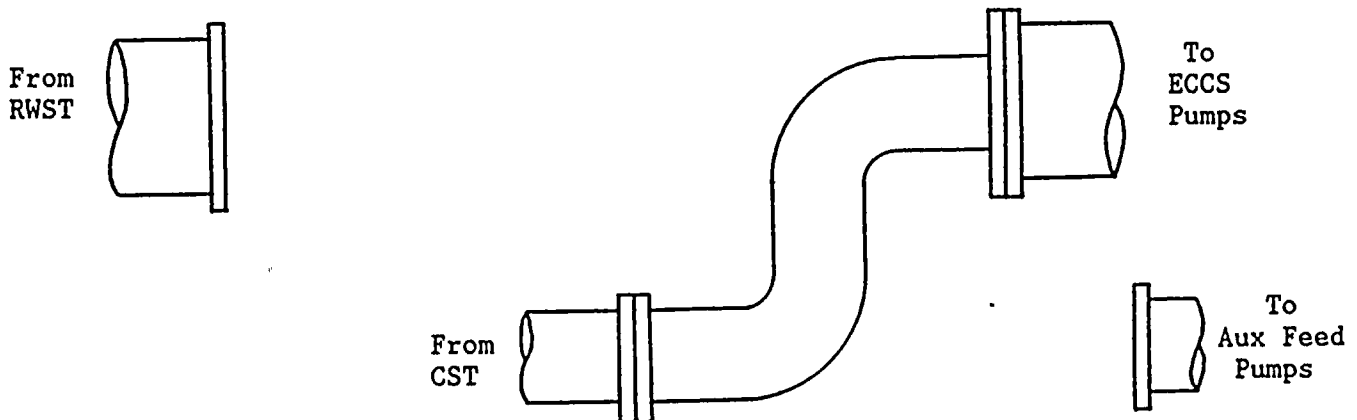
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ATTACHMENT 1

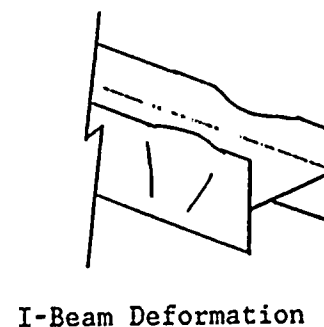
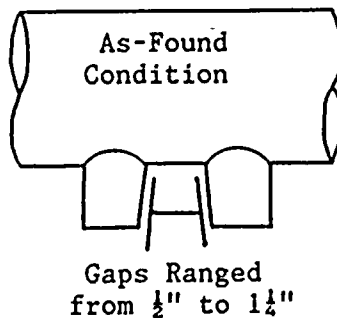
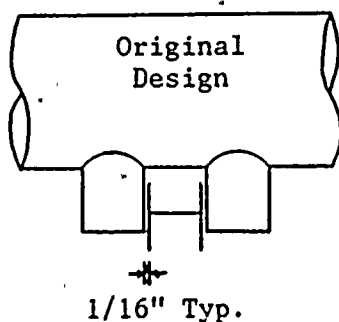
NORMAL PIPING CONFIGURATION



PIPING CONFIGURATION USED FOR FLUSHING AND TESTING



SUPPORT 2-GSI-L102 DETAIL



Indiana Michigan
Power Company
Cook Nuclear Plant
P.O. Box 458
Bridgman, MI 49106
616 465 5901



February 15, 1989

United States Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

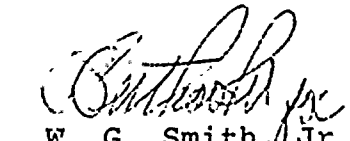
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Docket No. 50-316

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In accordance with the criteria established by 10 CFR 50.73
entitled Licensee Event Reporting System, the following
report is being submitted:

89-002-00

Sincerely,


W. G. Smith, Jr.
Plant Manager

WGS:clw

Attachment

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11