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AUTH.NAME AUTHOR AFFILIATION
SAMPSON,J.R. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele
BLIND,A.A. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 91-005-00:on 910614,bolts removed from pressurized essential svc water line expansion joints & water sprayed from flanges.Caused by reversed component labels.Joints reinstalled & labeling corrected.W/910715 ltr.

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Indiana Michigan
Power Company
Cook Nuclear Plant
One Cook Place
Bridgman, MI 49106
616 465 5901

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July 15, 1991

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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 Report System, the following report is being submitted:

91-005-00

Sincerely,

for A.A. Blind
Plant Manager

AAB:sb

Attachment

c: D.H. Williams, Jr.
A.B. Davis, Region III
E.E. Fitzpatrick
P.A. Barrett
B.F. Henderson
R.F. Kroeger
B. Walters - Ft. Wayne
NRC Resident Inspector
T. Colburn - NRC
J.G. Keppler
M.R. Padgett
G. Charnoff, Esq.
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NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WTH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
D. C. Cook Nuclear Plant - Unit 2	0 5 0 0 0 3 1 6	1 OF 0 5

TITLE (4) Bolts Removed from Pressurized Essential Service Water Line Expansion Joint Due to Reversed Component Labels

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 5 0 0 0
0 6	1 4	9 1	9 1	0 0 5	0 0	0 7	1 5	9 1		0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	1 0 0	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	X OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		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)	Voluntary Report

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
J. R. Sampson, Operations Superintendent	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	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)	X NO				

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

The west ('W') essential service water (ESW) train was made inoperable at 2146 on 6/13/91 in preparation for replacement of an 8-inch expansion joint labelled as 2-XJ-54W. At 0600 on 6/14/91, Maintenance personnel began to remove the flange bolts from the expansion joint. All of the flange bolts were removed at about 0700. The expansion joint remained lodged in place and water sprayed from the flanges. The water was initially believed to be either from trapped water or isolation point leakby. At 1240, however, it was identified that the expansion jointed labelled as being on the 'W' ESW train was actually on the east ('E') ESW train and the bolts were reinstalled at 1317. The Engineering review of this event determined that the water lossed out the flange was insignificant and that the expansion joint would have remained in place during a design basis earthquake. This event is being voluntarily reported as the analysis indicates the 'E' ESW train remained operable. The cause of the labelling problem could not be determined. The labeling problem with the 2-XJ-54 expansion joints was corrected on 6/14/91. A walkdown was performed on similar expansion joints in unit 1 and 2. One additional problem was found and corrected in unit 2 on 6/19/91. The labelling process was reviewed and determined to be adequate with this event being caused by a unique combination of circumstances. A lessons learned memo was issued 7/9/91 to Operations and Maintenance personnel on this event.

Conditions Prior to Occurrence

Unit 1 in Mode 1 (Power Operation) at 100 Percent Power

Unit 2 in Mode 1 (Power Operation) at 100 Percent Power

Description of Event

The west ('W') train of essential service water (EIIS/BI) was removed from service at 2146 on 6/13/91 to allow replacement of the expansion joint (EIIS/BI-EXJ) labeled as 2-XJ-54W, which is the 'W' train ESW supply to the emergency diesel generators (EIIS/EK-DG)(EDG). Maintenance personnel began removing the bolts from the expansion joint at about 0600 on 6/14/91.

The Maintenance personnel had been advised by the Assistant Shift Supervisor that the piping from the expansion joint to the drain point was not visible due to being in concrete so it was not certain that the piping at the expansion joint was completely drained. Based on this information, the Maintenance personnel expected some water to drain, but the drainage which occurred appeared to be at a higher-than-expected pressure. The Assistant Shift Supervisor from the next shift was contacted about this concern. The Maintenance personnel were told that since the expansion joint was located in the lower level of the building, the observed pressure was probably the result of elevation differences.

Originally, some bolts were left in the expansion joint flanges, but due to the flange arrangement it was not possible to spread the gap an appreciable amount without removing bolts. All of the bolts were removed at about 0700 and a tool was used to spread the gap between flange surfaces. This was done to increase the drain rate and minimize the time required to return the 'W' ESW train to service.

Between 0730 and 1230, there were a series of communications between the Maintenance personnel and Operations personnel regarding the continued drainage from the expansion joint. At one point during this time, an Auxiliary Equipment Operator (AEO) was sent to the area. The Operator reported back to the control room that the header appeared to be pressurized based on the drain rate from the expansion joint. The Unit Supervisor (senior reactor operator licensed) told the AEO he believed the appearance of being pressurized was either caused by the head associated with elevation differences or isolation point leakby.

At about 1230, the Shift Supervisor (senior reactor operator licensed) overheard a conversation between the Assistant Shift Supervisor and the AEO concerning the continued draining. The Shift Supervisor went to the work location and, after observing the water spray from the expansion joint, concluded that the expansion joint labeled as being on the 'W' ESW train was actually on the east ('E') train. The Shift Supervisor directed the Maintenance personnel to reinstall the expansion joint flange bolts. The bolts were reinstalled and tightened at 1317.

Cause of Event

The cause of the 2-XJ-54E and 2-XJ-54W labels being reversed could not be positively identified. The expansion joints were originally both labelled as 2-XJ-54. In 1986, both the unit 1 and unit 2 XJ-54 expansion joints were given unique north ('N') and south ('S') identifiers 1(2)XJ-54N and 1(2)XJ-54S. The piping drawings were changed at this time and new labels were placed. This change was somewhat confusing in that 'E' and 'W' train components were given 'N' and 'S' identifiers. Also, there was not consistency between the units. In unit 1 the 'W' train joint was designated as 'S' on the piping drawing and the 'E' train was designated as 'N'. In unit 2 the 'W' train joint was designated as 'N' on the piping drawing and the 'E' train was designated as 'S'.

The 'N' and 'S' labels on the unit 1 expansion joints were identified as being reversed on 7/29/90 when the 'E' train joint developed a significant leak and the 'W' train of ESW was first removed from service based on a review of the piping drawing and the installed 1-XJ-54S label. The labels were identified as being reversed when the leak flow did not decrease. As a result of this event, the labels on unit 2 were checked by two persons from the Plant labelling staff and verified as being correct. A request was also made at this time to change the identifiers to 'E' and 'W'.

The expansion joints were subsequently given 'E' and 'W' identifiers and the piping drawings were revised. The unit 2 drawing was revised 10/4/90 and the 'N' and 'S' labels were replaced with 'E' and 'W' labels. It is not known if the 'N' and 'S' labels were correctly placed and the 'E' and 'W' labels were reversed, or if the 'N' and 'S' labels were incorrectly placed and then replaced one for one with the 'E' and 'W' labels. There were two other factors which could have contributed to the labelling problem. First, the upstream and downstream piping of the expansion joints is buried in concrete and cannot be visually traced back to the main headers. Second, in unit 1 the main 'E' and 'W' ESW headers are physically 'E' and 'W', but in unit 2 the 'E' header is physically located west of the 'W' header.

In summary, it appears that the labelling problem could have been caused by a combination of factors including the two changes in component identifiers, the inconsistency between the drawings when the 'N' and 'S' identifiers were established, the piping being buried in concrete, and the difference between the units for the physical location of 'E' and 'W' ESW headers.

The length of time required to identify the problem was increased by a combination of factors. These factors included mindsets regarding isolation point leakby and elevation induced head, buried piping preventing recognition that the drain should have drained the involved section of piping, and failure to communicate all pertinent information to the Unit Supervisor.

Analysis of Event

This event was determined not reportable, but is being voluntarily reported. The 'E' ESW expansion joint was initially considered as being inoperable and the event was reported by a phone report under 10CFR50.72(b)(2)(ii)(A) as an unanalyzed condition. The subsequent Engineering analysis, however, determined that the 'E' ESW expansion joint remained operable.

With the 'W' ESW train isolated and drained, the 'E' ESW train was being relied on for ESW associated cooling loads. The involved expansion joint remained in place throughout this event and cooling water was available to the EDGs. The Engineering review of this event determined that the estimated maximum leakage from the expansion joint during the event would not have prevented the 'E' train from fulfilling its safety function. This review also concluded, based on a seismic analysis, that the expansion joint would have remained in place during a design basis earthquake. Since the Engineering review of this event determined that the 'E' ESW train remained capable of fulfilling its safety function, it was concluded that the 'E' ESW train remained operable.

Corrective Action

1. The 'E' ESW supply expansion joint bolts were reinstalled at 1317 on 6/14/91.

2. The labelling problem with 2-XJ-54E and 2-XJ-54W was corrected on 6/14/91.

3. The labelling for the unit 1 ESW supply and return expansion joints to the EDGs was checked and verified to be correct.

4. The labelling for the unit 2 ESW return expansion joints for the EDGs was checked and found to be reversed. The expansion joints were correctly labelled on 6/19/91.

5. The labelling process was reviewed for adequacy. It was determined that the current process is adequate and that it was a unique combination of factors that resulted in this event.

6. A lessons learned memo was issued 7/9/91 to Operations and Maintenance personnel on this event.

Failed Component Identification

None

Previous Similar Events

The 7/29/90 unit 1 event discussed in the Cause of Event section was similar to this event. The unit 1 event is currently being re-evaluated to confirm that the leak flow from the expansion joint did not render that train of ESW inoperable.