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 FACIL: 50-315 Donald C. Cook Nuclear Power Plant, Unit 1, Indiana M 05000315 R
 AUTH. NAME AUTHOR AFFILIATION
 WEBER, G.A. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele I
 BLIND, A.A. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele I
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 94-003-00: on 940311, inaccuracy existed in mean seat area. Cause was seat area proved to be inaccurate when comparison testing was performed. Corrective action: both units 1 & 2 will be reset. W/940411 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 5
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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



April 11, 1994

United States Nuclear Regulatory Commission
Document Control Desk
Rockville, Maryland 20852

Operating Licenses DPR-58
Docket No. 50-315

Document Control Manager:

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

94-003-00

Sincerely,


A. A. Blind
Plant Manager

/sb

Attachment

c: J. B. Martin, Region III
E. E. Fitzpatrick
P. A. Barrett
R. F. Kroeger
M. A. Bailey - Ft. Wayne
NRC Resident Inspector
J. B. Hickman - NRC
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9405020311 940411
PDR ADDCK 05000315
S PDR



LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH 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.

FACILITY NAME (1) D. C. COOK NUCLEAR PLANT - UNIT 1										DOCKET NUMBER (2) 0 5 0 0 0 3 1 5				PAGE (3) 1 OF 0 4		
TITLE (4) MAIN STEAM SAFETY VALVE TEST INACCURACY DUE TO MISCALCULATION OF VALVE SEAT AREA BY VENDOR																
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	1	1	9	4	9	4	0	0	3	0	0	0	3	1	5
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)				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)				OTHER (Specify in Abstract below and in Text, NRC Form 365A)		
		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)(ix)						
LICENSEE CONTACT FOR THIS LER (12)																
NAME G. A. WEBER - PLANT ENGINEERING SUPERINTENDENT										TELEPHONE NUMBER AREA CODE 6 1 6 4 6 5 - 1 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						
X	S	B	R	V	D	2	4	3	Y							
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)

On March 11, 1994, with Unit 1 in Mode 6 (Refueling) and Unit 2 in Mode 3 (Hot Standby) a letter was received by the Cook Plant from Furmanite America, Inc., which reported that an inaccuracy existed in the mean seat area constant (24.626 square inches) used to calculate the Main Steam Safety Valve (MSSV) lift setpoints in the vendor's Trevitest Program. The Trevitest calculation error resulted in MSSV lift setpoints being between 1 and 3 percent higher than previously determined. Consequently, all twenty MSSVs in each unit had lift setpoints outside the Technical Specification Limit of +/- 1 percent. An Engineering Evaluation of data comparing Trevitest results with data from a Full Pressure Steam Test has determined that the effective MSSV seat area is 23.047 square inches. This event, taken together with the high initial lift pressures reported in LER 50-315/94-001, revealed that despite the further increase in set pressure resulting from this event, the high lift setpoints would not have resulted in exceeding the design pressure of the steam generators in either unit.

Both Units 1 and 2 MSSVs will be reset to within their required set tolerance after entering Mode 3 (Hot Standby). Both Units 1 and 2 will Enter Mode 3 via the use of three Reactor Coolant Pumps with the Reactor Trip Breakers open.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
D. C. COOK NUCLEAR PLANT - UNIT 1	0 5 0 0 0 3 1 5	9 4	- 0 0 3	- 0 0	0 2	OF	0 4

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

Conditions Prior to Occurrence:

Unit-1 in Mode-6 (Refueling)

Unit-2 in Mode-3 (Hot Standby), Unit-2 previously shut down due to high generator vibration.

Description of Event:

On March 11, 1994, with Unit 1 in Mode 6 (Refueling) and Unit 2 in Mode 3 (Hot Standby) a letter was received by the Cook Plant from Furmanite America, Inc., which reported that an inaccuracy existed in the mean seat area constant (24.626 square inches) used to calculate the Main Steam Safety Valve (MSSV) lift setpoints in the vendor's Trevitest Program. The Trevitest calculation error resulted in MSSV lift setpoints being between 1 and 3 percent higher than previously determined. Consequently, all twenty MSSVs in each unit had lift setpoints outside the Technical Specification Limit of ± 1 percent. An Engineering Evaluation of data comparing Trevitest results with data from a Full Pressure Steam Test has determined that the effective MSSV seat area is 23.047 square inches. This event, taken together with the high initial lift pressures reported in LER 50-315/94-001, revealed that despite the further increase in set pressure resulting from this event, the high lift setpoints would not have resulted in exceeding the design pressure of the steam generators in either unit.

The Trevitest deficiency only applies to MSSV testing. Other safety valve testing is performed via bench testing, or sent off-site for testing under actual system conditions in an independent lab.

Cause of Event:

The vendor's method used to determine the seat area of the MSSVs was inaccurate. MSSV seat diameter was determined by averaging the inside and outside dimensions of the nozzle (see attached drawing). The average dimension was then used to determine the seat area. As reported by the vendor, this method of determining the seat area proved to be inaccurate when comparison testing was performed.

Analysis of Event:

This event is reportable via the provisions of 10CFR50.73(a)(2)(i)(B) as an operation prohibited by Plant Technical Specification 3.7.1.1. Technical Specification 3.7.1.1 requires that the Main Steam Safety Valves be operable in Modes 1 through 3. Operability requires that all twenty Main Steam Safety Valves lift within ± 1 percent of the Technical Specification Setpoints.

The Trevitest inaccuracy would have resulted in MSSV lift setpoints between one and three percent higher than the desired setpoint. The error, did result in exceeding the Technical Specification Limit of ± 1 percent for all 20 MSSVs in both Units 1 and 2. However, the Trevitest error, in itself, did not create an unsafe condition, as the analyzed limit of ± 3 percent would not have been exceeded.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
D. C. COOK NUCLEAR PLANT - UNIT 1	0 5 0 0 0 3 1 5	9 4	- 0 0 3	- 0 0	0 3	OF 0 4

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

Analysis of Event continued:

An evaluation revealed that the as-found MSSV lift setpoints would not have resulted in exceeding the design rating of either the Unit 1 or Unit 2 steam generators. A review of previous Trevitests revealed that, the Unit 1 MSSV Trevitests performed in February, 1994 is the worst set of as-found data (LER 050-315/94-001). A detailed review of the February, 1994 test data revealed that in many of the MSSV tests, the initial lift would be high. Subsequent lifts would indicate the MSSV actual set pressure. Once opened, these valves would go to a full flow or near full flow position and would not require an additional three percent accumulation to reach a full flow condition.

In conclusion, the Trevitest error would not have an adverse impact on the accident analysis described in the UFSAR. This conclusion is based on the availability of power margin, reactivity feedback margin, the availability of the Power Operated Relief Valves (EIIS/SB-PCV) on the secondary side, and the Pressurizer Safety Valves (EIIS/AB-RV) and Power Operated Relief Valves (EIIS/AB-PCV) on the primary side.

Corrective Actions:

An engineering review has determined the actual seat area of the MSSVs (23.047 square inches). The as-found and as-left MSSV lift setpoints have been re-evaluated using the actual seat area of the MSSVs. The Impact on the as-found test data will be detailed in the scheduled revision to LER 050-315/94-001, Out-Of-Specification MSSVs for Units 1 and 2.

MSSVs in both Units 1 and 2 will be retested after entering Mode-3 (Hot Standby). Both Units 1 and 2 will enter Mode 3 via the use of three Reactor Coolant Pumps with the Reactor Trip Breakers open.

Failed Component Identification:

Main Steam Safety Valve

Manufacturer: Dresser Consolidated Valves
Model: 3707RA-RT22
EIIS: SB-RV

Previous Similar Events:

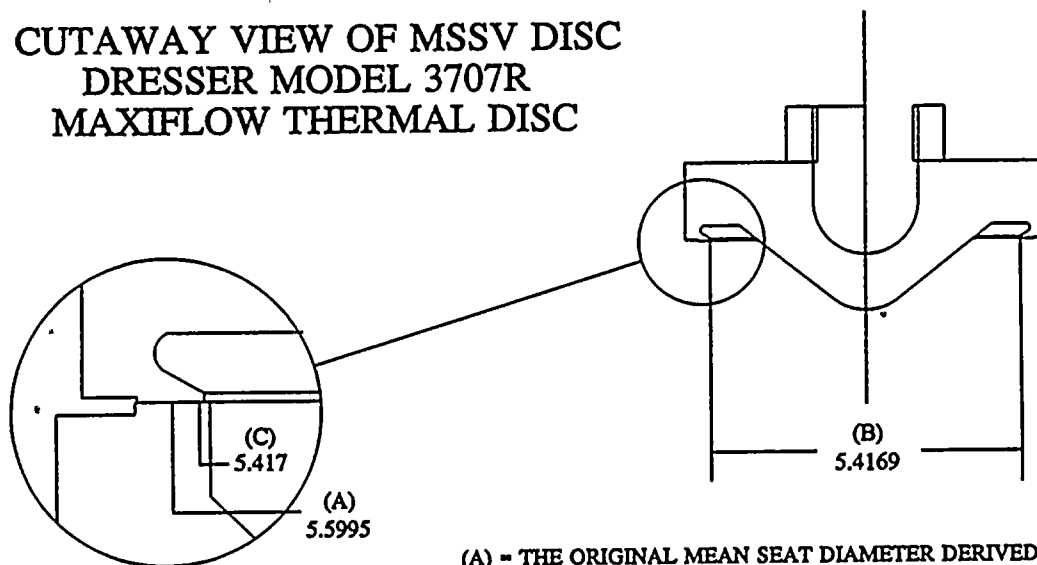
There have not been any previous similar events of this nature.

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FACILITY NAME (1) D. C. COOK NUCLEAR PLANT - UNIT 1	DOCKET NUMBER (2) 0 5 0 0 0 3 1 5	LER NUMBER (6)			PAGE (3)	
		YEAR 9 4	SEQUENTIAL NUMBER - 0 0 3	REVISION NUMBER - 0 0	0 4 OF 0 4	

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

CUTAWAY VIEW OF MSSV DISC
DRESSER MODEL 3707R
MAXIFLOW THERMAL DISC

- (A) - THE ORIGINAL MEAN SEAT DIAMETER DERIVED FROM FURMANITE'S MEAN SEAT AREA ASSUMPTION. THIS IS THE ORIGINAL SEAT AREA USED IN SETTING THE MAIN STEAM SAFETY VALVES. (24.626 SQUARE INCHES)
- (B) - SEAT DIAMETER DERIVED BY FURMANITE'S ANALYSIS OF COMPARISON TESTING DONE AT WESTINGHOUSE SERVICE CENTER. (23.046 SQUARE INCHES)
- (C) - SEAT DIAMETER DERIVED BY COOK ENGINEER/AEP TECHNICAL ASSESSMENT GROUP USING COMPARISON TESTING DATA GATHERED AT THE WESTINGHOUSE SERVICE CENTER. (23.047 SQUARE INCHES)