

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8706240402 DOC. DATE: 87/06/19 NOTARIZED: NO DOCKET #
 FACIL: 50-331 Duane Arnold Energy Center, Iowa Electric Light & Pow 05000331
 AUTH. NAME AUTHOR AFFILIATION
 THORSTEINSON, J. Iowa Electric Light & Power Co.
 HANNEN, R. L. Iowa Electric Light & Power Co.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 87-016-00: on 870521, determined that scram discharge vols (SDV) may not have adequate seismic support. Caused by personnel error during const of SDV. Design change has been completed to correct SDV support deficiencies. W/870619 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 4
 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
	PD3-1 LA	1 1	PD3-1 PD	1 1
	CAPPUCCI, A	1 1		
INTERNAL:	ACRS MICHELSON	1 1	ACRS MOELLER	2 2
	AEOD/DOA	1 1	AEOD/DSP/ROAB	2 2
	AEOD/DSP/TPAB	1 1	DEDRO	1 1
	NRR/DEST/ADE	1 0	NRR/DEST/ADS	1 0
	NRR/DEST/CEB	1 1	NRR/DEST/ELB	1 1
	NRR/DEST/ICSB	1 1	NRR/DEST/MEB	1 1
	NRR/DEST/MTB	1 1	NRR/DEST/PSB	1 1
	NRR/DEST/RSB	1 1	NRR/DEST/SGB	1 1
	NRR/DLPQ/HFB	1 1	NRR/DLPQ/QAB	1 1
	NRR/DOEA/EAB	1 1	NRR/DREP/RAB	1 1
	NRR/DREP/RPB	2 2	NRR/PMAS/ILRB	1 1
	NRR/PMAS/PTSB	1 1	<u>REG FILE</u> 02	1 1
	RES DEPY GI	1 1	RGN3 FILE 01	1 1
EXTERNAL:	EG&G GROH, M	5 5	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) Duane Arnold Energy Center (DAEC)	DOCKET NUMBER (2) 0 5 0 0 0 3 3 1	PAGE (3) 1 OF 0 4
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TITLE (4)
Seismically Unanalyzed Scram Discharge Volume Due to Error in Construction

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					
									None					
0	5	2	1	8	7	8	7	8	0	5	0	0	0	0
									0	5	0	0	0	0

OPERATING MODE (9) N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more of the following) (11)									
POWER LEVEL (10) 0 0 1 0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 60.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)						
	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 60.36(c)(1)	<input type="checkbox"/> 60.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)						
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 60.73(a)(2)(vii)	<input checked="" type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 366A)						
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 60.73(a)(2)(viii)(A)	Correct previous submittal info.						
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input checked="" type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 60.73(a)(2)(viii)(B)							
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 60.73(a)(2)(iii)	<input type="checkbox"/> 60.73(a)(2)(ix)								

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER
NAME Jeffrey C. Thorsteinson, Technical Support Supervisor	AREA CODE 3 1 9	NUMBER 8 5 1 - 7 2 3 8

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)											
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO					

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

On May 21, 1987, at approximately 1700 hours, with the plant shutdown for Cycle 8/9 refueling, it was determined that the scram discharge volumes may not have adequate seismic support. This determination was made based upon basic computer models of our existing system. Subsequent analysis using a more sophisticated computer model, which allowed modeling of scram exhaust lines, demonstrated that the SDVs would not have failed during a seismic event. Therefore, this condition had no affect on the health and safety of the public.

This condition is being reported pursuant to 10 CFR 50.73(a)(2)(ii), and is being submitted to correct the information provided in previous submittals to the Commission.

The root cause of this condition is personnel error during the construction of the SDVs. The contractor, Reactor Controls Inc., did not install the SDVs in accordance with design documents.

As a corrective action, a design change has been completed to correct the SDV support deficiencies. A review has been performed which indicates that the undetected personnel error was an isolated case.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Duane Arnold Energy Center (DAEC)	05000331	87	016	00	02	OF	04

TEXT (If more space is required, use additional NRC Form 306A's) (17)

On May 21, 1987, at approximately 1700 hours, with the plant shutdown for Cycle 8/9 refueling, it was determined that the scram discharge volumes (SDVs, EIS Code AA) may not have adequate seismic support. This determination was made based upon basic computer models of our existing system. Subsequent analysis using a more sophisticated computer model, which allowed modeling of scram exhaust lines, demonstrated that the SDVs would not have failed during a design basis seismic event.

The review of the SDVs seismic supports was initiated when a report on the Inservice Inspection Program identified several discrepancies in pipe supports on the SDVs support system. During the subsequent engineering review of the ISI Program report, we concluded that 8 of the 12 SDV pipe supports and the catwalk platforms which are integral to the support of the SDVs did not conform to the design assumed in the original seismic analysis. This condition has existed since plant construction.

The root cause of this condition is personnel error during the construction of the SDVs. The contractor, Reactor Controls Inc. (RCI), did not install the pipe supports in accordance with design documents. The system startup engineer did not document any discrepancies at that time.

We have investigated to determine why these "as-built" discrepancies escaped detection in the course of Iowa Electric's response to NRC Bulletins 79-14 (Seismic Analyses For As-Built Safety-Related Piping Systems) and 80-17 (Failure of Control Rods to Fully Insert During a Scram at a BWR). The BN 79-14 walkdowns of the SDVs were performed by a contractor in March, 1980. Records of that inspection show that the contractor's inspection team identified two pipe supports on the North section of the SDVs which did not conform to the drawing (The SDVs consist of two sections, North and South. Of the 8 pipe support deficiencies presently identified, four are on North section and four on the South section). The contractor did not identify that there were essentially identical deficiencies in six other pipe supports and did not properly resolve the two deficiencies identified. The two nonconformances were reviewed by a stress analyst who recommended that the seismic analysis be verified with the original SDV contractor, Reactor Controls, Inc. The contractor apparently did not follow-up with RCI, but instead erroneously approved the Nonconformance Resolution Sheets and reported to Iowa Electric that, although some discrepancies existed, the "as-built" configuration conformed to the design intent of the system. We reviewed the contractor's summary report and submitted it to the NRC on October 17, 1980 (LDR-80-284) to close out our response to BN 79-14.

Another review of the DAEC SDV piping was conducted in response to Bulletin 80-17, Supplement 1 (Item A.1) which requested BWR licensees provide an analysis of the adequacy of the "as-built" SDV system and associated vent and drain systems. We reviewed and modified (Design Change Request 983) only the portions of the system which had not been

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TEXT (If more space is required, use additional NRC Form 308A's) (17)

reviewed in response to BN 79-14. In the course of these activities, the contractor identified that eight SDV pipe clamps did not conform to the drawing details. The contractor revised the drawing, adding the detail of the eight pipe clamps. The revision to this drawing was made without reanalyzing the effect on the original stress analysis of the design as was required by the applicable procedure. In an attachment to a letter dated June 6, 1984 (BLIEG-84-227), the contractor notified us of the condition and stated that the pipe clamps might not provide the lateral support upon which the SDV pipe stress analysis was based. The contractor recommended that the connections be modified to the analyzed condition or the stress analysis be revised to reflect the "as-built" conditions. The letter also stated that a preliminary analysis of the CRD piping indicated that the "as-built" configuration would probably be acceptable. Specifically, the letter stated, "The stresses in these two sections increased slightly, but it appears that they will remain within code allowables if a formal Class I analysis, including fatigue evaluation were performed. Stresses in the one inch vent and drain piping attached to the SDV header, however, do not meet code allowables although they are below the ultimate strength stresses." We did not follow up on the contractor's recommendations until the most recent discovery because of an administrative oversight.

In 1984, in conjunction with our ten-year ISI Program, we audited our earlier BN 79-14 work and found discrepancies associated with the pipe support detail drawings. We reported these findings to the NRC (NG-85-3544, August 31, 1984) and initiated a program to perform: (1) an expanded re-walkdown and evaluation of all pipe supports covered by BN 79-14, and (2) a detailed review of all the original BN 79-14 walkdown packages to identify any anomalies. The re-walkdown program established a baseline for matching the "as-built" configuration with the analyzed condition of seismic piping systems at the DAEC. We reported to the NRC August 1, 1985 (NG-85-3426) that the re-walkdown program had been completed and that none of the discrepancies found in the original BN 79-14 work was a safety concern. However, the CRD Hydraulic System was not included in this program because we mistakenly believed that BN 80-17 and DCR 983 work would have addressed any discrepancies which may have been overlooked in the BN 79-14 walkdown. The re-walkdown did not identify any discrepancies because the "as-built" conformed with the design detail shown on the drawing which was revised without the proper seismic review.

As a corrective action in 1987, a design change has been completed to modify the SDV supports to restore intended seismic margins.

To provide further assurance that the nonconforming SDV supports are an isolated case, we have reviewed our design change process. This review consisted of the following:

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TEXT (If more space is required, use additional NRC Form 388A's) (17)

1. We reviewed BN 79-14 walkdown packages and compared the revision numbers of the drawings used in the original walkdown with the revision numbers used in the 1985 re-walkdown program. When different revisions of the drawings were used, we reviewed each drawing for unaddressed seismic concerns. There were none.
2. We reviewed piping system Document Design Changes (DDC) performed since the end of the 1985 re-walkdown program. DDCs performed as a result of the 1985 re-walkdown were excluded because they had already been reviewed. In all cases engineering evaluations and re-analysis (if required) had been properly performed for each DDC.
3. We have identified past Bechtel recommendations to Iowa Electric which have not been evaluated and have initiated evaluations.
4. We are initiating a system for tracking evaluation of vendor recommendations.

We are confident this was a unique case in which the BN 79-14 walkdown program failed to detect an "as-built" discrepancy. It occurred because the CRD Hydraulic System did not have its original walkdown package reviewed as part of the BN 79-14 re-walkdown. The CRD Hydraulic System was the only system so excluded from the 1984 re-walkdown. We are confident that seismic supports in other piping systems have been properly reviewed.

Computer analysis demonstrates that the SDVs would not have failed during a design basis seismic event. Therefore, this condition had no potential effect on the health and safety of the public. A review of plant history indicates that no similar conditions have occurred.

This condition is being reported pursuant to 10 CFR 50.73(a)(2)(ii) and corrects information provided in previous submittals to the Commission. These submittals are:

- (1) Letter, LDR80-224, dated 8/5/80, in response to BN 80-17 Supp. 1 (Root to Keppler)
- (2) Letter, LDR-80-227, dated 8/11/80, in response to BN 80-17 Supp. 1 (Root to Keppler)
- (3) Letter, LDR-80-284, dated 10/17/80, in response to BN 79-14 (Root to Keppler)
- (4) Letter, LDR-81-363, dated 12/30/81, in response to GL 81-34 (Root to Denton)

Iowa Electric Light and Power Company

June 19, 1987
DAEC-87-0744

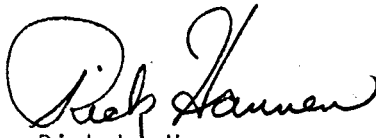
U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

Subject: Duane Arnold Energy Center
Docket No. 50-331
Op. License DPR-49
Licensee Event Report No. 87-016

Gentlemen:

In accordance with 10 CFR 50.73 please find attached a copy of the
subject Licensee Event Report.

Very truly yours,

 6/19/87
Rick L. Hannen
Plant Superintendent - Nuclear

RLH/JCT/go

Attachment - LER 87-016

cc: Mr. A. Bert Davis
Regional Administrator
Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

NRC Resident Inspector - DAEC

File A-118a

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