UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

AEOD/E211

FEB 24 1982

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MEMORANDUM FOR: Carlyle Michelson, Director
Office for Analysis and Evaluation
of Operational Data

FROM: Eugene V. Imbro, Lead Reactor Systems Engineer
Reactor Operations Analysis Branch

SUBJECT: REPETITIVE FAILURES OF EMERGENCY FEEDWATER FLOW VALVES AT ARKANSAS UNIT 2 BECAUSE OF VALVE OPERATOR HYDRAULIC PROBLEMS

On December 12, 1981, during a routine review of Combustion Engineering LERs, it was decided to acquire more information on LER 81-32 of Unit 2 of the Arkansas Nuclear One Power Plant. This LER described two separate failures of redundant Emergency Feedwater (EFW) supply valves, 2CV-1038 and 2CV-1075, associated with the electric motor driven EFW pump. Specifically, on August 15, EFW supply valve 2CV-1038 failed to operate because of a blown power supply fuse and on September 1, valve 2CV-1075 would not operate due to a lack of hydraulic pressure to the valve operator caused by a leaking mechanical seal. Our attention was drawn to this LER by the reference to eight previously reported similar events on the LER form.

When each of the referenced LERs was examined, it was apparent that the fuse failure was an isolated event, and that valve operator hydraulic problems were a repetitive mode of failure in the EFW system. (There are only two hydraulically operated valves in the EFW system, 2CV-1025 and 2CV-1075 - see attached flow diagram.) It was found that some of the referenced LERs were not for problems similar to the original LER; however, the LERs that did pertain to valve operator hydraulic problems referenced some additional LERs that were not referenced in the original LER. This sequence of acquiring LERs on Emergency Feedwater flow control valve failures due to failures of the hydraulic operator was persued until all relevant LERs were acquired. A draft table of the reported failures and the relevant LERs are attached.

In summary, in the past three years, there have been eight instances of a problem with the hydraulic valve operator system that prevented the closure of one-of-the-two Emergency Feedwater flow valves in the two loop system, In particular, valve 2CV-1025 failed to function on seven occasions as shown in the table below. In each case, the valve failed to close on demand from the control room. Failure-to-close would be the "safe" position for the valve in order to maintain auxiliary feedwater flow to the steam generators but one degree of redundancy would be lost if the valve was required to close on a main steam isolation signal (MSIS).1/ In each case, the redundant valve in the same loop and the valves in the alternate flow loop were tested operable.

1/ Footnote attached.

A161

Failure of Valve 2CV-1025 to Actuate

Date	Reason for Failure
10/6/78	Hydraulic pump motor failed making the valve inoperable.
6/9/79	Valve operator required to be filled and vented with oil.
11/22/79	Valve operator hydraulic pressure was low. Hydraulic system vented and pressure returned to normal.
11/24/79	Dirt in the valve operator hydraulic system.
11/25/79	Low valve operator hydraulic fluid - no leaks could be found.
12/1/79	Low fluid level in hydraulic accumulator due to leakage - accumulator replaced.
1/20/80	Lack of hydraulic pressure caused by air in the system.

The frequency and repetitive nature of the information in this table would lead to the suspicion that either the maintenance/surveillance has not been optimized or a thorough understanding of the operation of the valve operator's hydraulic system is lacking. This thought is strengthened by the fact that valve 2CV-1025 failed to actuate four times in a 2-week period. While the failure of this valve to operate in the Emergency Feedwater system presents no apparent consequence greater than a loss of redundancy, the root cause of the repetitive failures was unknown.

On February 1, 1982, we telephoned the licensee to discuss our observations on the hydraulic operators in the Emergency Feedwater system at Arkansas-2. The licensee, too, had been familiar with the repetitive nature of the failures and had implemented a corrective program shortly after reporting LER-80-3 in January 1980 (the last reported failure of valve 2CV-1025). The licensee's modifications included replacing the manifold of the Borg-Warner operators with a manifold that had significantly less fittings to reduce total air leakage into the hydraulic system. The check valves were replaced with softer seated valves, an internal filtration system was added, and the individual hydraulic accumulators were modified to retain pressure longer. In addition, a periodic preventive maintenance program was initiated to detect potentially degraded operation appreciably before the event becomes reportable.

Apparently, the licensee has recognized the problem and has provided the proper corrective action. Since initiation of the hydraulic operator modifications and the preventive maintenance program, valve 2CV-1025 has not failed to function; valve 2CV-1075 failed once, but the problem was not directly related to the previous events.

In the last 20 months, 2CV-1075 has required two additions of hydraulic fluid and valve 2CV-1025 has had five additions. Previously, the systems were refilled at more frequent intervals, i.e., when leakage was detected. This was generally before the valve became inoperable, and hence, before reportable. The EFW control valves are safety grade valves and are readily accessible during all conditions. They can be operated manually, if desired, by pumping the handle of a hand pump located on the side of the valve operator.

Although Arkansas-2 has apparently reduced the number of problems with the hydraulic valve actuation system to a reasonable level and adopted a successful monitoring program, we recommend that hydraulic valve operators be added to the AEOD "watch list." As a "watch list" item, similar problems at other operating plants can be trended and the dissemination of possible fixes, such as those in effect at Arkansas-2, can be transmitted to the licensees.

Theodore E. Quintale FOR

Eugene V. Imbro, Lead Reactor Systems Engineer
Reactor Operations Analysis Branch

Attachments:
As Stated

cc w/attachments:
E. Brown, AEOD
R. Martin, NRR
W. Johnson, IE

NRC FORM 366 (7-77)

U. S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

EXHIBIT A

CONTROL BLOCK: (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0 1	LICENSEE CODE	A R A N O 2 (2)
	LICENSE NUMBER	0 0 - 0 0 0 0 0 - 0 0 (3)
	LICENSE TYPE	4 1 1 1 1 (4)
	CAT	(5)
CON'T 0 1	REPORT SOURCE	L (6)
	DOCKET NUMBER	0 5 0 0 0 3 6 8 (7)
	EVENT DATE	0 8 1 5 8 1 (8)
	REPORT DATE	0 9 1 5 8 1 (9)

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 On 8/15/81, during unit startup, Emergency Feedwater (EFW) flow valve,
0 3 2CV-1038, failed rendering one flowpath to "A" Steam Generator inoperable.
0 4 On 9/1/81, during Mode 1 operation, EFW flow falve, 2CV-1075, would not
0 5 operate from the Control Room, again rendering one flowpath to "A" Steam
0 6 Generator inoperable. Alternate flowpath remained operable in both cases.
0 7 The 8/15/81 occurrence is similar to LER's 50-368/78-026, 79-037. The
0 8 9/1/81 occurrence is similar to LER's 79-043, 79-036, 79-037, 79-090, 79-092 and 80-003. Reportable per T.S.6.9.1.9.b.

0 9	SYSTEM CODE	CAUSE CODE	CAUSE SUBCODE	COMPONENT CODE	COMP. SUBCODE	VALVE SUBCODE
	H H (11)	E (12)	B (13)	V A L V O P (14)	A (15)	Z (16)

(17) LER/RO REPORT NUMBER	EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE	REPORT TYPE		REVISION NO.
	8 1	—	0 3 2	/	0 3	L	—	0

ACTION TAKEN	FUTURE ACTION	EFFECT ON PLANT	SHUTDOWN METHOD	HOURS (22)	ATTACHMENT SUBMITTED	NPRD-4 FORM SUB.	PRIME COMP. SUPPLIER	COMPONENT MANUFACTURER
B (18)	Z (19)	Z (20)	Z (21)	0 0 0 0	N (23)	Y (24)	A (25)	B 3 5 0 (26)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 Valve 2CV1038 failed due to a power supply fuse blown caused by a relay
1 1 failure. The relay was replaced and the valve was returned to operable
1 2 status. Valve 2CV1075 failed due to a lack of hydraulic pressure caused
1 3 by a low fluid level caused by a leaking mechanical seal. The seal was
1 4 replaced and the valve was returned to operable status.

1 5	FACILITY STATUS	% POWER	OTHER STATUS (30)	METHOD OF DISCOVERY	DISCOVERY DESCRIPTION (32)
	E (28)	0 9 5 (29)	NA	A (31)	Operator Observation

1 6	ACTIVITY RELEASED	CONTENT OF RELEASE	AMOUNT OF ACTIVITY (35)	LOCATION OF RELEASE (36)
	Z (33)	Z (34)	NA	NA

PERSONNEL EXPOSURES

1 7	NUMBER	TYPE	DESCRIPTION (39)
	0 0 0 (37)	Z (38)	NA

PERSONNEL INJURIES

1 8	NUMBER	DESCRIPTION (41)
	0 0 0 (40)	NA

LOSS OF OR DAMAGE TO FACILITY (43)

1 9	TYPE	DESCRIPTION
	Z (42)	NA

PUBLICITY

2 0	ISSUED	DESCRIPTION (45)	NRC USE ONLY
	N (44)	NA	

NAME OF PREPARER Chris N. Shively PHONE: 501/968-2519

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NRC FORM 366 (7-77)

U. S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

EXHIBIT A

CONTROL BLOCK: | | | | | | | (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0 1	LICENSEE CODE	A R A N O 2 (2)
	LICENSE NUMBER	0 0 - 0 0 0 0 0 - 0 0 (3)
	LICENSE TYPE	4 1 1 1 1 (4)
	CAT	(5)

CON'T 0 1	REPORT SOURCE	L (6)
	DOCKET NUMBER	0 5 0 0 0 3 6 8 (7)
	EVENT DATE	0 1 2 0 8 0 (8)
	REPORT DATE	0 2 1 5 8 0 (9)

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 During Mode 3 operation, with the electric driven Emergency Feedwater
0 3 pump, 2P7B, in service as an auxiliary feedwater pump for normal start-up
0 4 Steam Generator feed, EFW flow control valve, 2CV-1025-1, failed to close
0 5 on demand from the Control Room. The valve failed in the EFW, or safe
0 6 position. The block valve was used to control level and all redundant
0 7 EFW valves were proven operable. Similar to LER 50-368/79-092, 79-090,
0 8 79-089, 79-088, and 79-043. Reportable per T.S.6.9.1.9.b.

0 9	
SYSTEM CODE	W B (11)
CAUSE CODE	E (12)
CAUSE SUBCODE	B (13)
COMPONENT CODE	V A L V 0 P (14)
COMP SUBCODE	A (15)
VALVE SUBCODE	Z (16)

(17) LER/RO REPORT NUMBER

EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE	REPORT TYPE		REVISION NO.
8 0	—	0 0 3	/	0 3	L	—	0

ACTION TAKEN	FUTURE ACTION	EFFECT ON PLANT	SHUTDOWN METHOD	HOURS (22)	ATTACHMENT SUBMITTED	NPRD-4 FORM SUB.	PRIME COMP. SUPPLIER	COMPONENT MANUFACTURER
B (18)	Z (19)	Z (20)	Z (21)	0 0 0 0	N (23)	N (24)	N (25)	W 1 2 7 (26)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 Investigation revealed that the valve failed to operate due to the lack
1 1 of hydraulic pressure caused by air in the system. The accumulator did
1 2 did not indicate low oil. The hydraulic system was vented & filled with
1 3 oil. The requirements of Action Statement T.S.3.7.1.2 were met. One
1 4 valve operator was returned to vendor for analysis.

1 5	
FACILITY STATUS	B (28)
% POWER	0 0 0 (29)
OTHER STATUS (30)	NA
METHOD OF DISCOVERY	A (31)
DISCOVERY DESCRIPTION (32)	NA

1 6	
ACTIVITY RELEASED	Z (33)
CONTENT OF RELEASE	Z (34)
AMOUNT OF ACTIVITY (35)	NA
LOCATION OF RELEASE (36)	NA

PERSONNEL EXPOSURES

1 7	
NUMBER	0 0 0 (37)
TYPE	Z (38)
DESCRIPTION (39)	NA

PERSONNEL INJURIES

1 8	
NUMBER	0 0 0 (40)
DESCRIPTION (41)	NA

LOSS OF OR DAMAGE TO FACILITY (43)

1 9	
TYPE	Z (42)
DESCRIPTION	NA

PUBLICITY

2 0	
ISSUED	N (44)
DESCRIPTION (45)	NA

NRC USE ONLY

NAME OF PREPARER Chris N. Shively

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NRC FORM 366
(7-77)

U. S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

EXHIBIT A

CONTROL BLOCK: | | | | | | | (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0 1 | A R A N O 2 (2) | 0 0 - 0 0 0 0 0 - 0 0 (3) | 4 1 1 1 1 (4) | | (5)
LICENSEE CODE — LICENSE NUMBER — LICENSE TYPE — CAT

CON'T
0 1 REPORT SOURCE L (6) | 0 5 0 0 0 3 6 8 (7) | 1 2 0 1 7 9 (8) | 1 2 2 1 7 9 (9)
DOCKET NUMBER — EVENT DATE — REPORT DATE

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 During Mode 2 operation, with the electric driven Emergency Feedwater
0 3 pump, 2P7B, in service as an auxiliary feedwater pump for normal startup
0 4 Steam Generator feed, EFW flow control valve, 2CV-1025-1, failed to close
0 5 on demand from the Control Room. The valve failed in the EFW, or safe,
0 6 position. All redundant EFW valves were successfully stroked from the
0 7 Control Room. This occurrence is similar to LER 50-368/79-090, 79-089,
0 8 79,088 and 79-043. Other LER's involving valve 2CV-1025-1 are 50-368/
79-068, 79-054, 79-051, 79-035, 78-028 and 78-009. Reportable per T.S.6.9.1.9.b.

SYSTEM CODE	CAUSE CODE	CAUSE SUBCODE	COMPONENT CODE	COMP. SUBCODE	VALVE SUBCODE
W B (11)	E (12)	B (13)	V A L V O P (14)	A (15)	Z (16)

(17) LER/RO REPORT NUMBER

EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE	REPORT TYPE		REVISION NO.
7 9	–	0 9 2	/	0 3	L	–	0

ACTION TAKEN	FUTURE ACTION	EFFECT ON PLANT	SHUTDOWN METHOD	HOURS (22)	ATTACHMENT SUBMITTED	NPRD-4 FORM SUB.	PRIME COMP. SUPPLIER	COMPONENT MANUFACTURER
A (18)	Z (19)	Z (20)	Z (21)	0 0 0 0 0	N (23)	N (24)	N (25)	W 1 2 7 (26)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 Investigation revealed that the valve failed to operate due to the lack of
1 1 hydraulic pressure caused by a low fluid level in the hydraulic accumula-
1 2 tor because of leakage. The accumulator was replaced and the system was
1 3 filled and vented. The valve was declared operable within 19 hours,
1 4 meeting the requirements of Action Statement T.S. 3.7.1.2.

	FACILITY STATUS	% POWER	OTHER STATUS (30)	METHOD OF DISCOVERY	DISCOVERY DESCRIPTION (32)
1 5	B (28)	0 0 2 (29)	NA	A (31)	NA

	ACTIVITY RELEASED	CONTENT OF RELEASE	AMOUNT OF ACTIVITY (35)	LOCATION OF RELEASE (36)
1 6	Z (33)	Z (34)	NA	NA

PERSONNEL EXPOSURES

	NUMBER	TYPE	DESCRIPTION (39)
1 7	0 0 0 (37)	Z (38)	NA

PERSONNEL INJURIES

	NUMBER	DESCRIPTION (41)
1 8	0 0 0 (40)	NA

LOSS OF OR DAMAGE TO FACILITY (43)

	TYPE	DESCRIPTION
1 9	Z (42)	NA

PUBLICITY

	ISSUED	DESCRIPTION (45)	NRC USE ONLY
2 0	N (44)	NA	

NAME OF PREPARER Chris N. Shively PHONE 501/968-2519

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NRC FORM 366 (7-77)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

EXHIBIT A

CONTROL BLOCK: | | | | | | | (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0 1 | A R A N O 2 | (2) | 0 0 - 0 0 0 0 0 - 0 0 | (3) | 4 1 1 1 1 | (4) | | | (5)
LICENSEE CODE / LICENSE NUMBER / LICENSE TYPE / CAT

CON'T 0 1 REPORT SOURCE | L | (6) | 0 5 0 0 0 3 6 8 | (7) | 1 1 2 5 7 9 | (8) | 1 2 2 1 7 9 | (9)
DOCKET NUMBER / EVENT DATE / REPORT DATE

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 During Mode 3 operation, with the electric driven Emergency Feedwater
0 3 pump, 2P7B, in service as an auxiliary feedwater pump for normal startup
0 4 Steam Generator feed, EFW flow control valve, 2CV-1025-1, failed to close
0 5 on demand from the Control Room. The valve failed in the EFW, or safe,
0 6 position. All redundant EFW valves were successfully stroked from the
0 7 Control Room. This occurrence is similar to LER 50-368/79-089, 79-088,
0 8 79-043. Other occurrences involving 2CV-1025-1 are 50-368/79-068, 79-054, 79-051, 79-035, 78-028 and 78-009. Reportable per T.S. 6.9.1.9.b.

SYSTEM CODE	CAUSE CODE	CAUSE SUBCODE	COMPONENT CODE	COMP. SUPPLIER	VALVE SUBCODE
W B (11)	E (12)	B (13)	V A L V O P (14)	A (15)	Z (16)

(17) LER/RO REPORT NUMBER

EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE	REPORT TYPE		REVISION NO.
7 9	—	0 9 0	/	0 3	L	—	0

ACTION TAKEN	FUTURE ACTION	EFFECT ON PLANT	SHUTDOWN METHOD	HOURS (22)	ATTACHMENT SUBMITTED	NPRD-4 FORM SUB.	PRIME COMP. SUPPLIER	COMPONENT MANUFACTURER
B (18)	Z (19)	Z (20)	Z (21)	0 0 0 0	N (23)	N (24)	N (25)	W 1 2 7 (26)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 Investigation revealed that the valve operator's hydraulic system was low
1 1 of fluid. No leaks could be found. The system was filled and the valve
1 2 was declared operable within four (4) hours, meeting the requirements of
1 3 Action Statement T.S. 3.7.1.2.
1 4

FACILITY STATUS	% POWER	OTHER STATUS (30)	METHOD OF DISCOVERY	DISCOVERY DESCRIPTION (32)
B (28)	0 0 0 (29)	NA	A (31)	NA

ACTIVITY RELEASED	CONTENT OF RELEASE	AMOUNT OF ACTIVITY (35)	LOCATION OF RELEASE (36)
Z (33)	Z (34)	NA	NA

PERSONNEL EXPOSURES

NUMBER	TYPE	DESCRIPTION (39)
0 0 0 (37)	Z (38)	NA

PERSONNEL INJURIES

NUMBER	DESCRIPTION (41)
0 0 0 (40)	NA

LOSS OF OR DAMAGE TO FACILITY (43)

TYPE	DESCRIPTION
Z (42)	NA

PUBLICITY

ISSUED	DESCRIPTION (45)	NRC USE ONLY
N (44)	NA	

NAME OF PREPARER Chris N. Shively PHONE 501/968-2519

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NRC FORM 366
(7-77)

U. S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

EXHIBIT A

CONTROL BLOCK: | | | | | | | (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0 1 | A R A N O 2 | (2) | 0 0 - 0 0 0 0 0 - 0 0 | (3) | 4 1 1 1 1 | (4) | | | (5)
LICENSEE CODE — LICENSE NUMBER — LICENSE TYPE — CAT

CON'T 0 1 | REPORT SOURCE L (6) | 0 5 0 0 0 3 6 8 (7) | 1 1 2 4 7 9 (8) | 1 2 2 1 7 9 (9)
DOCKET NUMBER — EVENT DATE — REPORT DATE

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 During Mode 3 operation, with the electric driven Emergency Feedwater
0 3 pump, 2P7B, in service as an auxiliary feedwater pump for normal startup
0 4 Steam Generator feed, EFW flow control valve, 2CV-1025-1, failed to close
0 5 on demand from the Control Room. The valve failed in the EFW, or safe,
0 6 position. All redundant EFW valves were successfully stroked from the
0 7 Control Room. This occurrence is similar to LER 50-368/79-088 and 79-043.
0 8 Other occurrences involving 2CV-1025-1 are 50-368/79-068, 79-054, 79-051
79-035, 78-028 and 78-009. Reportable per T.S. 6.9.1.9.b.

0 9 SYSTEM CODE W B (11) CAUSE CODE E (12) CAUSE SUBCODE B (13) COMPONENT CODE V A L V O P (14) COMP. SUBCODE A (15) VALVE SUBCODE Z (16)

(17) LER/RO REPORT NUMBER: EVENT YEAR 7 9 — SEQUENTIAL REPORT NO. 0 8 9 / OCCURRENCE CODE 0 3 REPORT TYPE L — REVISION NO. 0

ACTION TAKEN B (18) FUTURE ACTION Z (19) EFFECT ON PLANT Z (20) SHUTDOWN METHOD Z (21) HOURS (22) 0 0 0 0 ATTACHMENT SUBMITTED N (23) NPRD-4 FORM SUB. N (24) PRIME COMP. SUPPLIER N (25) COMPONENT MANUFACTURER W 1 2 7 (26)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 Investigation revealed trash in the valve operator's hydraulic system and
1 1 the hydraulic snubber out of adjustment, restricting oil flow in one
1 2 direction. The hydraulic system was cleaned, the hydraulic snubber was
1 3 adjusted, the valve stroked satisfactorily and declared operable within
1 4 13 hours, meeting the requirements of Action Statement T.S. 3.7.1.2.

1 5 FACILITY STATUS B (28) % POWER 0 0 0 (29) OTHER STATUS (30) CEA Testing METHOD OF DISCOVERY A (31) DISCOVERY DESCRIPTION (32) NA

1 6 ACTIVITY RELEASED Z (33) CONTENT OF RELEASE Z (34) AMOUNT OF ACTIVITY (35) NA LOCATION OF RELEASE (36) NA

PERSONNEL EXPOSURES
1 7 NUMBER 0 0 0 (37) TYPE Z (38) DESCRIPTION (39) NA

PERSONNEL INJURIES
1 8 NUMBER 0 0 0 (40) DESCRIPTION (41) NA

LOSS OF OR DAMAGE TO FACILITY (43)
1 9 TYPE Z (42) DESCRIPTION NA

PUBLICITY
2 0 ISSUED N (44) DESCRIPTION (45) NA

NRC USE ONLY

NAME OF PREPARER Chris N. Shively PHONE: 501/968-2519

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NRC FORM 366 (7-77)

U. S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

EXHIBIT A

CONTROL BLOCK: | | | | | | | (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0 1 | A R A N O 2 (2) | 0 0 - 0 0 0 0 0 - 0 0 (3) | 4 1 1 1 1 (4) | | (5)
LICENSEE CODE / LICENSE NUMBER / LICENSE TYPE / CAT

CON'T 0 1 | REPORT SOURCE L (6) | 0 5 0 0 0 3 6 8 (7) | 1 1 2 2 7 9 (8) | 1 2 2 1 7 9 (9)
DOCKET NUMBER / EVENT DATE / REPORT DATE

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 During Mode 3 operation, with the electric driven Emergency Feedwater
0 3 pump, 2P7B, in service as an auxiliary feedwater pump for normal startup
0 4 Steam Generator feed, EFW flow control valve, 2CV-1025-1, failed to close
0 5 on demand from the Control Room. The valve failed in the EFW, or safe,
0 6 position. All redundant EFW valves were successfully stroked from the
0 7 Control Room. This occurrence is similar to LER 50-368/79-043. Other
0 8 occurrences involving valve 2CV-1025-1 are 50-368/79-068, 79-054, 79-051, 79-035, 78-028 and 78-009. Reportable per T.S. 6.9.1.9.b.

SYSTEM CODE	CAUSE CODE	CAUSE SUBCODE	COMPONENT CODE	COMP. SUPPLIER	VALVE SUBCODE
W B (11)	E (12)	B (13)	V A L V O P (14)	A (15)	Z (16)

(17) LER/RO REPORT NUMBER

EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE	REPORT TYPE		REVISION NO.
7 9	–	0 8 8	/	0 3	L	–	0

ACTION TAKEN	FUTURE ACTION	EFFECT ON PLANT	SHUTDOWN METHOD	HOURS (22)	ATTACHMENT SUBMITTED	NPRD-4 FORM SUB.	PRIME COMP. SUPPLIER	COMPONENT MANUFACTURER
B (18)	Z (19)	Z (20)	Z (21)	0 0 0 0	N (23)	N (24)	N (25)	W 1 2 7 (26)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 Investigation revealed that the valve operator's hydraulic pressure was
1 1 low. The hydraulic system was vented, the reservoir was returned to
1 2 normal level, and the hydraulic pressure was adjusted. The valve was
1 3 successfully stroke tested and declared operable within 29 hours, meeting
1 4 the requirement of Action Statement T.S. 3.7.1.2.

1 5 | FACILITY STATUS: B (28) | % POWER: 0 0 0 (29) | OTHER STATUS (30): NA | METHOD OF DISCOVERY: A (31) | DISCOVERY DESCRIPTION (32): NA

1 6 | ACTIVITY RELEASED: Z (33) | CONTENT OF RELEASE: Z (34) | AMOUNT OF ACTIVITY (35): NA | LOCATION OF RELEASE (36): NA

PERSONNEL EXPOSURES
1 7 | NUMBER: 0 0 0 (37) | TYPE: Z (38) | DESCRIPTION (39): NA

PERSONNEL INJURIES
1 8 | NUMBER: 0 0 0 (40) | DESCRIPTION (41): NA.

LOSS OF OR DAMAGE TO FACILITY (43)
1 9 | TYPE: Z (42) | DESCRIPTION: NA

PUBLICITY
2 0 | ISSUED: N (44) | DESCRIPTION (45): NA

NRC USE ONLY

NAME OF PREPARER Chris N. Shively PHONE: 501/968-2519

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NRC FORM 366 (7-77)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

EXHIBIT A

CONTROL BLOCK: | | | | | | | (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

01 | A R A N O 2 (2) | 0 0 - 0 0 0 0 0 - 0 0 (3) | 4 1 1 1 1 (4) | | (5)

LICENSEE CODE / LICENSE NUMBER / LICENSE TYPE / CAT

CON'T 01 | REPORT SOURCE L (6) | 0 5 0 0 0 3 6 8 (7) | 0 6 0 9 7 9 (8) | 0 6 2 7 7 9 (9)

DOCKET NUMBER / EVENT DATE / REPORT DATE

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

02 During Mode 3 operation, Emergency Feedwater flow control valves
03 from the electric driven EFW pump, 2P7A, to the "A" Steam
04 Generator, 2CV-1025-1 and 2CV-1038-1, failed to close from a
05 control room demand signal. The open position is required for EFAS; therefore,
06 the EFW flowpath would be uneffected in an emergency situation. The remainder
07 of the EFW valves were successfully tested from the control room. Occurrence
08 similar to 50-368/79-035, 78-028, & 78-009. Reportable per T.S.6.1.9.1(b).

09 | SYSTEM CODE: W B (11) | CAUSE CODE: E (12) | CAUSE SUBCODE: B (13) | COMPONENT CODE: V A L V Ø P (14) | COMP. SUBCODE: A (15) | VALVE SUBCODE: Z (16)

(17) LER/RO REPORT NUMBER | EVENT YEAR: 7 9 | — | SEQUENTIAL REPORT NO.: 0 4 3 | / | OCCURRENCE CODE: 0 3 | REPORT TYPE: L | — | REVISION NO.: 0

ACTION TAKEN: B (18) | FUTURE ACTION: Z (19) | EFFECT ON PLANT: Z (20) | SHUTDOWN METHOD: Z (21) | HOURS (22): 0 0 0 0 | ATTACHMENT SUBMITTED: N (23) | NPRD-4 FORM SUB.: N (24) | PRIME COMP. SUPPLIER: N (25) | COMPONENT MANUFACTURER: E 2 9 9 (26)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

10 Investigation revealed that 2CV-1038-1 would not operate due to
11 a loose wire on the handswitch. Valve 2CV-1025-1 required to be
12 filled and vented with oil. The valves were operable within
13 the 72 hours as required by Action Statement T.S.3.7.1.2.
14

15 | FACILITY STATUS: B (28) | % POWER: 0 0 0 (29) | OTHER STATUS (30): NA | METHOD OF DISCOVERY: A (31) | DISCOVERY DESCRIPTION (32): NA

16 | ACTIVITY RELEASED OF RELEASE: Z (33) | CONTENT: Z (34) | AMOUNT OF ACTIVITY (35): NA | LOCATION OF RELEASE (36): NA

PERSONNEL EXPOSURES
17 | NUMBER: 0 0 0 (37) | TYPE: Z (38) | DESCRIPTION (39): NA

PERSONNEL INJURIES
18 | NUMBER: 0 0 0 (40) | DESCRIPTION (41): NA

LOSS OF OR DAMAGE TO FACILITY (43)
19 | TYPE: Z (42) | DESCRIPTION: NA

PUBLICITY
20 | ISSUED: N (44) | DESCRIPTION (45): NA | NRC USE ONLY

NAME OF PREPARER: Chris N. Shively | PHONE: 501/968-2519

7907090 297

NRC FORM 366 (7-77)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

EXHIBIT A

CONTROL BLOCK: | | | | | | | (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0 1 | A R A N O 2 (2) | 0 0 - 0 0 0 0 0 - 0 0 (3) | 4 1 1 1 1 (4) | | | (5)
LICENSEE CODE | LICENSE NUMBER | LICENSE TYPE | CAT

CON'T 0 1 REPORT SOURCE L (6) | 0 5 0 0 0 3 6 8 (7) | 1 0 0 6 7 8 (8) | 1 1 0 3 7 8 (9)
DOCKET NUMBER | EVENT DATE | REPORT DATE

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 During Post-Core Hot Functional Testing, prior to initial criticality,
0 3 Mode 3 operation, Emergency Feedwater valve 2CV-1025-1
0 4 hydraulic pump motor failed making the valve inoperable.
0 5 Operability is required for associated flowpath per T.S.3.7.1.2.
0 6 LER 50-368/78-2 also involved the Emergency Feedwater
0 7 System, but was not similar in nature.
0 8

	SYSTEM CODE	CAUSE CODE	CAUSE SUBCODE	COMPONENT CODE	COMP SUBCODE	VALVE SUBCODE
0 9	W B (11)	E (12)	B (13)	V A L V O P (14)	C (15)	G (16)

(17) LER/RO REPORT NUMBER	EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE	REPORT TYPE		REVISION NO.
	7 8	–	0 0 9	/	0 3	L	–	0

ACTION TAKEN	FUTURE ACTION	EFFECT ON PLANT	SHUTDOWN METHOD	HOURS (22)	ATTACHMENT SUBMITTED	NPRD-4 FORM SUB.	PRIME COMP. SUPPLIER	COMPONENT MANUFACTURER
A (18)	Z (19)	Z (20)	Z (21)	0 0 0 0	N (23)	Y (24)	N (25)	B 3 5 0 (26)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 The hydraulic pump motor for valve 2CV-1025-1 was
1 1 replaced and successfully tested. The emergency
1 2 feedwater flowpath was re-established within 27 hours
1 3 meeting requirement of Action Statement T.S. 3.7.1.2.
1 4

	FACILITY STATUS	% POWER	OTHER STATUS (30)	METHOD OF DISCOVERY	DISCOVERY DESCRIPTION (32)
1 5	B (28)	0 0 0 (29)	Post-Core HFT	A (31)	NA

	ACTIVITY RELEASED	CONTENT OF RELEASE	AMOUNT OF ACTIVITY (35)	LOCATION OF RELEASE (36)
1 6	Z (33)	Z (34)	NA	NA

PERSONNEL EXPOSURES

	NUMBER	TYPE	DESCRIPTION (39)
1 7	0 0 0 (37)	Z (38)	NA

PERSONNEL INJURIES

	NUMBER	DESCRIPTION (41)
1 8	0 0 0 (40)	NA

LOSS OF OR DAMAGE TO FACILITY (43)

	TYPE	DESCRIPTION
1 9	Z (42)	NA

PUBLICITY

	ISSUED	DESCRIPTION (45)	NRC USE ONLY
2 0	N (44)	NA	

NAME OF PREPARER Chris N. Shively PHONE 501/968-2519

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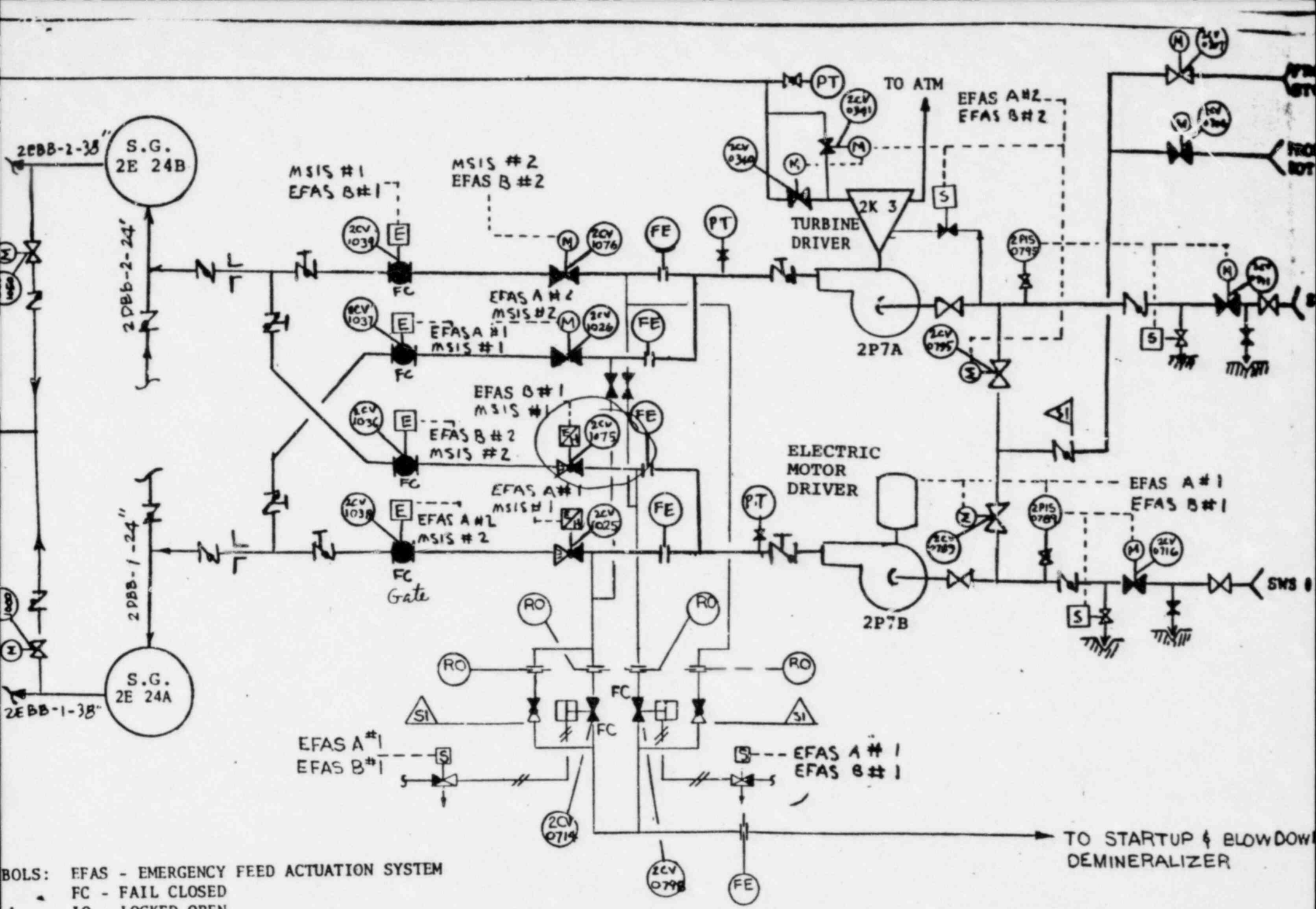

BOLS: EFAS - EMERGENCY FEED ACTUATION SYSTEM
FC - FAIL CLOSED
LO - LOCKED OPEN
- ELECTRO-HYDRAULIC OPERATOR
- SEISMIC I BOUNDARY
[E] - ELECTRIC- SPRING OPERATOR

FLOW

ARKANSAS POWER & LIGHT	EMERGENC