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UTILITIES INC.

July 19, 1994
NG-94-2659

Mr. John B. Martin
Regional Administrator
Region III
U. S. Nuclear Regulatory Commission
801 Warrenville Road
Lisle, IL 60532

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License DPR-49
Licensee Event Report #94-006, Rev. 01

Gentlemen:

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

The following new commitment is made in this letter:

The position indicator plates and pointer pins will be removed from all the valves in the plant with Roto Hammer model 482-B valve extensions.

Very truly yours,

David L. Wilson
Plant Superintendent - Nuclear

DLW/JWK/eah

cc: Director of Nuclear Reactor Regulation
Document Control Desk
U.S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, D. C. 20555

NRC Resident Inspector - DAEC

250091

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NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Duane Arnold Energy Center	05000 331	1 OF 6

TITLE (4) Reactor Water Cleanup Isolation Due to Incomplete Valve Closure Caused by Position Indicator Obstruction

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
04	26	94	94	-- 006 --	01	07	19	94	FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	1
POWER LEVEL (10)	100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

20.402(b)	20.405(c)	X 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
20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)
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)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (include Area Code)
John W. Karrick, Licensing Specialist	(319) 851-7648

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
YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO					

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

At 0400 hours on April 26, 1994, with the plant operating at 100% power, a Group V Primary Containment Isolation System (PCIS) signal was received and the appropriate valves closed as a result of a Reactor Water Cleanup (RWCU) high differential flow signal. The flow differential occurred while an operator was performing a system tagout during which the "A" RWCU pump discharge valve was required to be fully closed but was not. Subsequent system draining resulted in flow back through the partially open discharge valve resulting in the high differential flow condition. The plant was in day 2 of a 7 day Limiting Condition for Operation (LCO) for the "A" Core Spray subsystem.

The cause of this event was that the position indicator on the discharge valve reached the full closed position, stopping valve movement, prior to the valve being full closed. Contributing factors were improper set up of the indicator nut during previous work and the unavailability of communications in the RWCU pump room.

Corrective actions include removal of the position indicators and indicating plates, revising the tagout procedure, providing interim guidance to operators, and installing a plant page speaker in the RWCU pump room. There was no effect on plant safety, personnel safety or plant availability as a result of this event.

I. DESCRIPTION OF EVENT:

At approximately 0330 on April 26, 1994, a non-licensed operator began performing a tagout of the "A" Reactor Water Cleanup (RWCU) recirculation pump in support of maintenance on a valve on the pump discharge header. The "B" RWCU recirculation pump was in service and operating at the time. The "A" pump discharge valve was manually closed in the normal method by use of a handwheel attached to a Roto Hammer valve extension (Fig. 1). The operator used the remote position indicator in addition to feeling normal shutting torque on the handwheel in closing the valve for the tagout. As directed by the tagout, the operator began draining and venting the portion of the system isolated by the tagout. When the drain valves located between the pump discharge check valve and the pump discharge isolation valve were opened, flow commenced as expected through the drain valves into a closed drain system. The operator heard flow noise, but believed it was only from depressurizing the isolated portion of the system. It was not realized at that time that the drainage included back flow through the partially open pump discharge isolation valve. The control room noticed an increase in RWCU inlet flow of approximately 30 gpm at which time attempts were made to contact the operator in the RWCU pump room. Due to the lack of a plant page speaker in the room, the operator did not hear the control room operator's announcements to shut the drain valves. At 0400, after a 45 second time delay in the logic, a Group V Primary Containment Isolation (PCIS) signal was received and the appropriate RWCU isolation valves closed. The signal was from a high differential flow in the RWCU system. The setpoint for this actuation is 40 gpm.

A second operator was sent to the room who instructed the first operator to verify the valve positions of those valves on the tagout. Upon actions to locally check shut the "A" pump discharge valve, the position pointer on the Roto Hammer valve extension broke off, after which the valve was able to be moved 1/2 turn in the closed direction.

At the time of the isolation, the plant was operating at 100% power and was in day 2 of a 7 day Limiting Condition for Operation (LCO) for the "A" Core Spray subsystem. The isolation was reset and the RWCU system was returned to service at 0447.

II. CAUSE OF THE EVENT:

The cause of this event was the remote position indicator on the Roto Hammer valve extension for the "A" RWCU pump discharge valve preventing full valve closure. The position indicator, when at the end of its travel, was able to draw the stem of the remote handwheel tight, simulating valve closing torque (See Fig. 1). This and the fact that it also indicated closed, misled the operator into believing the valve was closed.

A contributing factor to the indicator problem was an improper set up of the indicator nut during previous maintenance. The indicator had been previously broken and was replaced with a new pointer and indicator nut. This work was done with the system operating and the valve in the open position. Upon installation of the new indicator nut, it was adjusted to indicate open. Subsequent cycling of this valve has shown that the position indicator travel length is insufficient to allow for full valve travel. Also, because the critical function of this valve is to isolate the pump, the position indicator should have been set up with the valve in the fully closed position. These considerations were not understood at the time the maintenance was performed.

A contributing factor to the event was the lack of an immediate communication path between the control room and the operator in the RWCU pump room. Specifically, there was no plant page speaker in the room and the speaker outside the room could not be heard.

III. ANALYSIS OF EVENT:

There was no effect on plant safety, personnel safety or continued plant operation as a result of this event.

Though the RWCU system experienced fluid loss, the drains that were used are connected to a closed radioactive waste system such that there was no threat of leakage or contamination.

The tagout was written such that before maintenance could begin, the portion of the system that was isolated had to be drained and vented. In the event that the isolation had not occurred, there would not have been a significant threat to safety of maintenance personnel because of the drained and vented condition required by the tagout.

The RWCU system responded as designed upon receipt of the isolation signal. The RWCU filter demineralizers automatically switched to the Hold mode of operation when the isolation valves closed. The system was returned to service at 0447. The effect on plant chemistry as a result of RWCU being isolated for 47 minutes was negligible.

IV. CORRECTIVE ACTIONS:

1. Interim guidance has been provided for operators to locally verify valve positions when operating valves with reach rods. System response will be used when possible for this verification if local verification is prohibited. This guidance will remain in place until permanent corrective actions have been implemented.

2. The position indicator was repaired and modified on the "A" RWCU pump discharge valve. The modification eliminated the possibility of the position indicator inhibiting full valve travel. This action was completed on June 28, 1994.

3. An evaluation of the remaining valves in the plant that have similar reach rods and indicators was performed to determine generic corrective actions. As a result of the evaluation, removal of the indicator plate and pointer will be performed to all the valves with the same type valve extensions, including the "A" RWCU pump discharge valve. This action will be completed by September 30, 1994.

4. The tagout procedure will be revised to add specific guidance when tagging out valves with reach rods to ensure a second means of determining valve position is used when available. This action will be completed by July 29, 1994.

5. A plant page speaker was installed in the RWCU pump room. This action was completed on June 17, 1994.

V. ADDITIONAL INFORMATION:

A. Previous Similar Events:

LERs 85-013, 89-004, and 89-015 all involved RWCU isolations specifically from a high differential flow signal.

B. EIIS System and Component Codes:

PCIS - JM
RWCU - CE
Valve, isolation - ISV

C. Equipment Information:

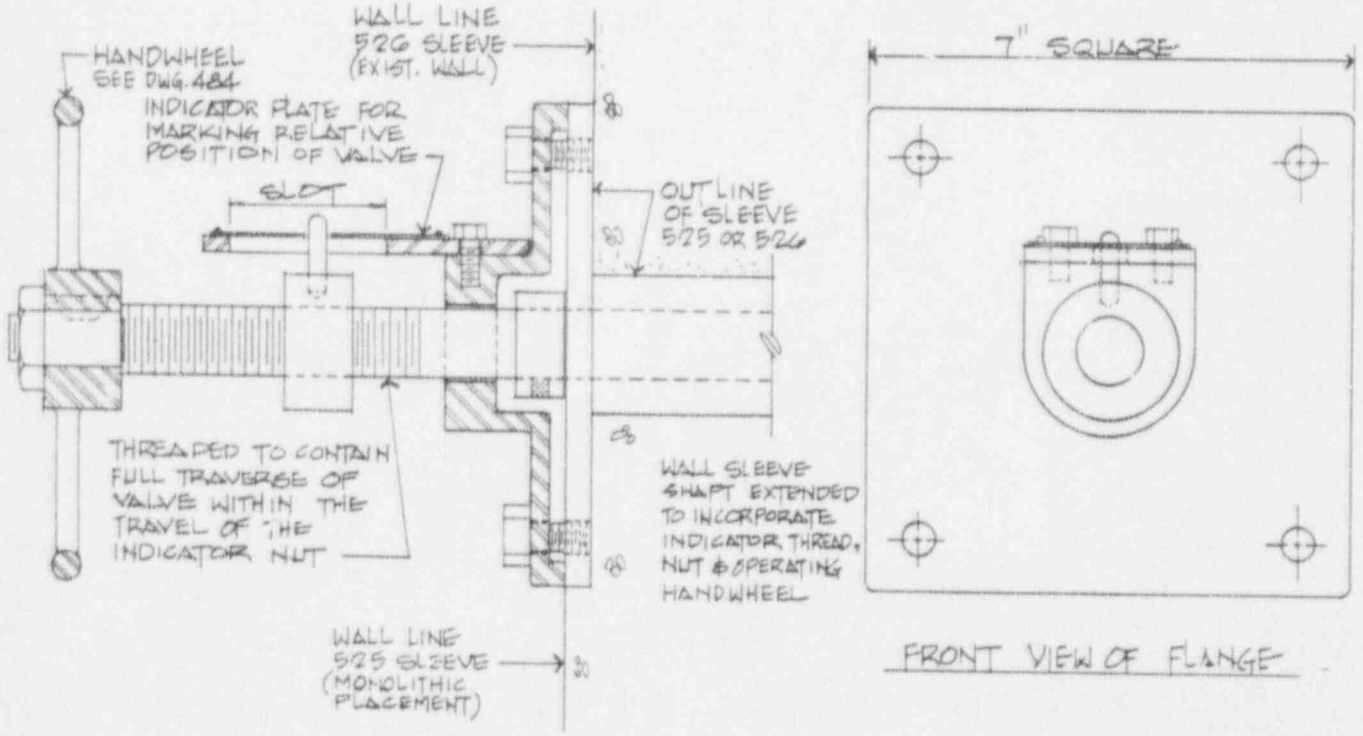
The handwheel and position indicator installed on the valve reach rod are Roto Hammer (R397) Model 482-B (drawing No. 481).

D. Reporting Criteria:

In reviewing this event for reportability, site personnel had initially determined that the signal causing the Engineered Safety Feature (ESF) actuation was invalid based on the guidance in the Federal Register dated September 10, 1992. The invalid signal was then applied to the exception criteria listed in 10CFR50.73(a)(2)(iv)(B)(3)(i). Subsequent evaluation determined that the signal was valid, and notification was made in accordance 10CFR50.72 but not within the required 4 hour time frame from when the actuation occurred.

This report is being submitted pursuant to 10CFR50.73(a)(2)(iv).

Figure 1



MATERIALS:

FLANGE	CAST IRON
INDICATOR NUT	CAST IRON
POINTER	STEEL
INDICATOR & BASE	STEEL

ROTO HAMMER COMPANY

VALVE OPERATING HANDWHEEL WITH POSITION INDICATOR, MODEL 481W (NUCLEAR)