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(ACCELERATED RIDS PROCESSING)
REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9408090475 DOC.DATE: 94/08/04 NOTARIZED: NO DOCKET #
FACIL:50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylva 05000387
AUTH.NAME AUTHOR AFFILIATION
METER,J.J. Pennsylvania Power & Light Co.
STANLEY,H.G. Pennsylvania Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 94-011-00:on 940707,RWCU containment isolation valves isolated on high differential flow due to leakage past work boundary valve & out of sys drains.Affected drain valves closed & leakage from sys stopped.W/940804 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 4
TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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August 4, 1994

U.S. Nuclear Regulatory Commission
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SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 94-011-00
FILE R41-2
PLAS -609

Docket No. 50-387
License No. NPF-14

Attached is Licensee Event Report 94-011-00. This report is being made pursuant to 10CFR50.73(a)(2)(iv), in that an unplanned actuation of an Engineered Safety Feature occurred when the Reactor Water Cleanup System primary containment isolation valves closed due to a high differential flow signal.

H.G. Stanley
VP - Nuclear Operations

JJM/mjm

cc: Mr. T. T. Martin
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JE22

NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

# LICENSEE EVENT REPORT (LER)

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.

| FACILITY NAME (1) | DOCKET NUMBER (2) | PAGE (3) |
|---|---|---|
| Susquehanna Steam Electric Station - Unit 1 | 0 5 0 0 0 3 8 7 | 1 OF 0 3 |

TITLE (4)

RWCU Containment Isolation Valves Isolated on High Differential Flow

| 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 7 | 0 7 | 9 4 | 9 4 | — 0 1 1 | — 0 0 | 0 8 | 0 4 | 9 4 | | 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) | 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 (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) | | |

LICENSEE CONTACT FOR THIS LER (12)

| NAME | TELEPHONE NUMBER | |
|---|---|---|
| | AREA CODE | |
| Joseph J. Meter - Power Production Engineer | 7 1 7 | 5 4 2 - 1 8 7 3 |

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)


On July 7, 1994, at 0947 hours with Unit 1 in Condition 1 at 100% power, an Engineered Safety Feature (ESF) actuation occurred when the Reactor Water Cleanup (RWCU) System's containment isolation valves automatically closed due to a high differential flow signal. The high differential flow signal was attributed to leakage past a work boundary valve (air operated - failed closed) and then out of system drains. The leakage was subsequently collected in the Reactor Building floor drain system. The leakage into the isolated section of the RWCU system and out of the drain valves was sufficient to isolate the entire system on high differential flow. Upon discovery of the condition, Operations closed the affected drain valves and leakage from the system was stopped. The RWCU was subsequently returned to service. There was no significant loss of coolant inventory nor was there any damage or degradation of the RWCU system during the event. There were no safety consequences or compromise to the public health or safety as a result of this event. The RWCU containment isolation valves performed as expected during the event. Corrective actions include changing the applicable procedure to show that involved valves should not be used as work boundaries and to review the acceptability of other station air operated - fail closed valves as a work boundary.

## DESCRIPTION OF EVENT

On July 7, 1994, at 0947 hours with Unit 1 in Condition 1 at 100% power, an Engineered Safety Feature (ESF) actuation occurred when the Reactor Water Cleanup (RWCU, EIIS Code: CE) System's containment isolation valves (EIIS Code: JM) automatically closed due to a high differential flow signal. The high differential flow signal was attributed to leakage past a work boundary valve and then out of system drains. The leakage was subsequently collected in the Reactor Building floor drain system. The leakage into the isolated section of the system and out of the drain valves was sufficient to isolate the entire system on high differential flow. Upon discovery of the condition, Operations (Utility, non-licensed) closed the affected drain valves and leakage from the system was stopped. The RWCU system was subsequently returned to service at 1615 hours. The RWCU containment isolation valves performed as expected during the event. There was no significant loss of coolant inventory nor was there any damage or degradation of the RWCU system during the event. There were no safety consequences or compromise to the public health or safety as a result of this event.

## CAUSE OF EVENT

The high differential flow signal was attributed to leakage past a work boundary valve and then out of system drains. The leakage into the isolated section of the system and out of the drain valves was sufficient to isolate the entire system on high differential flow. The leakage past the work boundary valve (air operated-failed closed) was due to the valve disc lifting from its seat due to system pressure. The valves in question are air operated valves with spring assist closure. The assumption with using the valves for work boundary purposes was that their design was such that when the air was removed from the valves they would fail closed and stay closed at maximum system operating pressures. The manufacturer of the valves was contacted and the design of the valves in question was that air to the valve operators in conjunction with the spring force is needed to keep the valves closed at maximum operating pressure.

## REPORTABILITY / ANALYSIS

This event was determined to be reportable per 10CFR50.73(a)(2)(iv), in that an unplanned ESF actuation occurred when the RWCU system's primary containment isolation valves automatically closed following receipt of a high differential flow signal. There was no significant loss of coolant inventory nor was there any damage or degradation of the RWCU system during the event. The leakage was subsequently collected in the Reactor Building floor drain system. There were no safety consequences or compromise to the public health or safety as a result of this event. The RWCU containment isolation valves performed as expected during the event.

In accordance with guidance provided in 10CFR50.4(d), the required submission date for this report was determined to be 08/08/94.

CORRECTIVE ACTIONS

Upon discovery of the condition, Operations closed the affected drain valves and leakage from the system was stopped. The RWCU was subsequently returned to service at 1615 hours. Corrective actions include changing the applicable procedure to show that involved valves should not be used as work boundaries and to review the acceptability of other station air operated - fail closed valves as a work boundary.

ADDITIONAL INFORMATION

Failed Component Identification: Not Applicable

Past Similar Events:

Although the causes for the previous events were different than this case, a review of past Licensee Event Reports (LERs) for the station identified fifteen events where RWCU isolated on high flow or high differential flow signals.

| Unit (NPF-14, Docket 387) | Unit 2 (NPF-22, Docket 388) |
|---|---|
| 84-047-00 | 84-015-01 |
| 85-007-00 | 85-024-00 |
| 85-017-00 | 86-006-00 |
| 85-032-00 | 86-017-00 |
| 87-001-00 | 89-004-00 |
| 89-011-00 | 92-009-00 |
| 89-016-00 | |
| 91-008-00 | |
| 92-003-00 | |