

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9607020039 DOC.DATE: 96/06/26 NOTARIZED: NO DOCKET #
 FACIL:50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylva 05000387
 AUTH.NAME AUTHOR AFFILIATION
 WEHRY,R.R. Pennsylvania Power & Light Co.
 KUCZYNSKI,G.J. Pennsylvania Power & Light Co.
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: Retraction of LER 95-015-01 re nonconservancy in heat balance calculation impact on rated core thermal power.

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

NOTES:

05000387

| | RECIPIENT ID CODE/NAME | COPIES | LTR | ENCL | RECIPIENT ID CODE/NAME | COPIES | LTR | ENCL |
|-----------|---------------------------|--------|-----|------|---------------------------|--------|-----|------|
| | PD1-2 PD | 1 | 1 | | POSLUSNY,C | 1 | 1 | |
| INTERNAL: | ACRS | 1 | 1 | | AEOD/SPD/RAB | 2 | 2 | |
| | AEOD/SPD/RRAB | 1 | 1 | | FILE CENTER | 1 | 1 | |
| | NRR/DE/ECGB | 1 | 1 | | NRR/DE/EELB | 1 | 1 | |
| | NRR/DE/EMEB | 1 | 1 | | NRR/DRCH/HHFB | 1 | 1 | |
| | NRR/DRCH/HICB | 1 | 1 | | NRR/DRCH/HOLB | 1 | 1 | |
| | NRR/DRCH/HQMB | 1 | 1 | | NRR/DRPM/PECB | 1 | 1 | |
| | NRR/DSSA/SPLB | 1 | 1 | | NRR/DSSA/SRXB | 1 | 1 | |
| | RES/DSIR/EIB | 1 | 1 | | RGNI FILE 01 | 1 | 1 | |
| EXTERNAL: | L ST LOBBY WARD | 1 | 1 | | LITCO BRYCE,J H | 2 | 2 | |
| | NOAC MURPHY,G.A | 1 | 1 | | NOAC POORE,W. | 1 | 1 | |
| | NRC PDR | 1 | 1 | | NUDOCS FULL TXT | 1 | 1 | |
| NOTES: | | 1 | 1 | | | | | |

NOTE TO ALL "RIDS" RECIPIENTS:
 PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK,
 ROOM OWFN 5D-5 (EXT. 415-2083) TO ELIMINATE YOUR NAME FROM
 DISTRIBUTION LISTS FOR DOCUMENTS YOU DON'T NEED!

FULL TEXT CONVERSION REQUIRED
 TOTAL NUMBER OF COPIES REQUIRED: LTR 27 ENCL 27

C
A
T
E
G
O
R
Y

1

D
O
C
U
M
E
N
T



Pennsylvania Power & Light Company

Two North Ninth Street • Allentown, PA 18101-1179 • 610/774-5151

June 26, 1996

U.S. Nuclear Regulatory Commission
Document Control Desk
Mail Station P1-137
Washington, DC 20555

SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 50-387/95-015-01
PLAS - 669 FILE R41-2

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

Attached is Licensee Event Report 95-015-01. This report supplements Licensee Event Report 50-387/95-015-00 which was made pursuant to NRC Document SSINS #0200, "Discussion Of Licensed Power Level", in that a non-conservatism in the heat balance calculations for Susquehanna Units 1 and 2 was believed to have resulted in the licensed shift average core thermal power (CTP) level for the units being exceeded by up to 1.8 MWt. An administrative limit of 3439 MWt (versus a licensed power level of 3441 MWt) had been imposed on the units.

Subsequent analysis concluded that the actual CTP output was less than that which had been calculated by the existing heat balance and that the licensed shift average CTP limit was never exceeded. The administrative CTP limit was removed from both units.

This Licensee Event Report is hereby retracted.

G. J. Kuczynski
Plant Manager - Susquehanna SES

RRW/dmd

cc: Mr. T. T. Martin
Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Ms. Maitri Banerjee
Sr. Resident Inspector
U.S. Nuclear Regulatory Commission
P.O. Box 35
Berwick, PA 18603-0035

9607020039 960626
PDR ADOCK 05000387
S PDR

12
1

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), U7.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) Susquehanna Steam Electric Station - Unit 1 | DOCKET NUMBER(2) 0 5 0 0 0 3 8 7 1 | PAGE (3) OF 0 3 |
|---|--|---------------------------|

TITLE (4)
Non-Conservancy In Heat Balance Calculation Impact On Rated Core Thermal Power (Retraction)

| 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) | | | | | | | | | | |
| 1 | 2 | 1 | 1 | 9 | 5 | 9 | 5 | 0 | 1 | 5 | 0 | 1 | 0 | 6 | 2 | 6 | 9 | 6 | SSES - Unit 2 | | 0 5 0 0 0 3 8 8 |
| | | | | | | | | | | | | 0 5 0 0 0 | | | | | | | | | |

| | | | | | | | | | | |
|----------------------------------|--|---|---|--|--|--|--|--|--|--|
| OPERATING MODE (9) 1 | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 1: (Check one or more of the following) (11) | | | | | | | | | |
| POWER LEVEL (10) 1 0 0 | <input type="checkbox"/> 20.402(b) | <input type="checkbox"/> 20.405(c) | <input type="checkbox"/> 50.73(a)(2)(v) | <input type="checkbox"/> 73.71(b) | | | | | | |
| | <input type="checkbox"/> 20.405(a)(1)(i) | <input type="checkbox"/> 50.38(c)(1) | <input type="checkbox"/> 50.73(a)(2)(v) | <input type="checkbox"/> 73.71(c) | | | | | | |
| | <input type="checkbox"/> 20.405(a)(1)(g) | <input type="checkbox"/> 50.38(c)(2) | <input type="checkbox"/> 50.73(a)(2)(v) | <input checked="" type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 368A) | | | | | | |
| | <input type="checkbox"/> 20.405(a)(1)(ii) | <input type="checkbox"/> 50.73(a)(2)(i) | <input type="checkbox"/> 50.73(a)(2)(iv)(A) | SSINS #0200 | | | | | | |
| | <input type="checkbox"/> 20.405(a)(1)(v) | <input type="checkbox"/> 50.73(a)(2)(ii) | <input type="checkbox"/> 50.73(1)(2)(iv)(B) | | | | | | | |
| | <input type="checkbox"/> 20.405(a)(1)(v) | <input type="checkbox"/> 50.73(a)(2)(iii) | <input type="checkbox"/> 50.73(a)(2)(v) | | | | | | | |

(LICENSEE CONTACT FOR THIS LER (12))

| | |
|--|---|
| NAME Richard R. Wehry - Nuclear Licensing Engineer | TELEPHONE NUMBER |
| | AREA CODE: 7 1 7 5 4 2 - 3 6 6 4 |

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)

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

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

On December 11, 1995, with Unit 1 and Unit 2 in Condition 1 (Power Operation) at 100% power, evaluation of industry information for applicability to Susquehanna had concluded at that time that a non-conservatism in the heat balance equations may have resulted in exceeding the licensed shift average core thermal power (CTP) by up to 1.8 MWt. Specifically, the energy inputs to the reactor control volume from Reactor Recirculation Pump seal flow from the Control Rod Drive system and Reactor Water Cleanup Pump purge water flow from the Condensate Transfer system had not been included in the heat balance calculation. The discovered condition was attributed to reliance on the General Electric (GE) CTP Calculation and acceptance of the validity and applicability of the GE model and acceptance tests; and the lack of clear understanding within PP&L that a rigorous in-house CTP Calculation design basis was required and the lack of evaluation of impacts to the CTP as a result of changes to the plant. An administrative limit of 3439 MWt (versus a licensed power level of 3441 MWt) was imposed on the units.

Subsequent analysis, however, concluded that the actual core thermal power output was less than that which had been calculated by the current heat balance. Therefore, the shift average CTP limit was never exceeded and the 2 MWt derate from the licensed power level of 3441 MWt to 3439 MWt was removed. As such, this Licensee Event Report is hereby retracted.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

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) Unit 1 Susquehanna Steam Electric Station | DOCKET NUMBER (2) 0 5 0 0 0 3 8 7 | LER NUMBER (6) | | | | | | PAGE (3) | | |
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | | | | | | |
| | | 9 5 | 0 1 5 | 0 1 | | | 2 | OF | 3 | |

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

DESCRIPTION OF EVENT

On December 11, 1995, with Unit 1 and Unit 2 in Condition 1 (Power Operation) at 100% power, evaluation of industry information for applicability to Susquehanna had concluded at that time that a non-conservatism in the heat balance equations for both units may have resulted in exceeding the licensed shift average core thermal power (CTP) by up to 1.8 MWt. Specifically, the energy inputs to the reactor control volume from Reactor Recirculation (EISS Code: AD) Pump seal flow from the Control Rod Drive (CRD; EISS Code: AA) system and Reactor Water Cleanup (RWCU; EISS Code: CE) Pump purge water flow from the Condensate Transfer (EISS Code: SC) system had not been included in the heat balance calculation.

CAUSE OF EVENT

The discovered condition was attributed to:

- Reliance on the General Electric (GE) CTP Calculation and acceptance of the validity and applicability of the GE model and acceptance tests;
- Lack of clear understanding within PP&L that a rigorous in-house CTP Calculation design basis was required and the lack of evaluation of impacts to the CTP Calculation as a result of changes to the plant.

REPORTABILITY / ANALYSIS

The discovered condition had been reported pursuant to NRC Document SSINS #0200, "Discussion of Licensed Power Level" (AITS.F1458OHZ), dated August 22, 1980. This document states that the shift average power level should not exceed the full steady state licensed power.

Subsequent analysis, however, concluded that the actual CTP output was less than that which had been calculated by the current heat balance and that the shift average CTP was never exceeded. As such, this Licensee Event Report is hereby retracted.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

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) | DOCKET NUMBER (2) | LER NUMBER (6) | | | | | | PAGE (3) | | |
|------------------------------------|-------------------------------|----------------|-------------------|-----------------|---|----|---|----------|--|--|
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | | | | | | |
| Unit 1 | | | | | | | | | | |
| Susquehanna Steam Electric Station | 0 5 0 0 0 3 8 7 | 9 5 | — 0 1 5 | — 0 1 | 3 | OF | 3 | | | |

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

CORRECTIVE ACTIONS

An administrative limit of 3439 MWt (versus 3441 MWt) was imposed on both Susquehanna units as an interim corrective measure. Following subsequent analysis which concluded that the actual CTP output never exceeded the licensed shift average CTP, the administrative limit was removed.

Corrective actions taken/being taken as a result of this event include:

- Creating an in-house technical basis for the CTP Calculation (complete) and conducting appropriate training;
- Updating the computer (plant (complete), simulator and fuel (complete)) and manual CTP Calculation (complete), as necessary, (based on the new CTP Calculation technical basis);
- Training appropriate personnel concerning the importance of a questioning attitude in using vendor supplied information and management's expectation that personnel identify conditions found to not have established bases;
- Reviewing past plant modifications for any potential impacts to the CTP Calculation;
- Enhancing the modifications program to ensure that future plant changes are evaluated for potential impact to the CTP Calculation.

ADDITIONAL INFORMATION

Failed Component Identification: None

Previous Similar Reported Events: LER 50-388 / 95-008-00 documented that Unit 2 shift average thermal power level was exceeded by up to 4 MWt (Note that this was 0.116% of rated CTP vice 0.0116% as stated in the LER (decimal error))

LER 50-388 / 95-003-00 documented that Unit 2 shift average thermal power exceeded rated CTP due to feedwater flow instrument problem.

