

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8809280002 DOC. DATE: 88/09/21 NOTARIZED: NO DOCKET #  
 FACIL: 50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250  
 AUTH. NAME AUTHOR AFFILIATION  
 LYONS, E. Florida Power & Light Co.  
 CONWAY, W. F. Florida Power & Light Co.  
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-019-00: on 880822, boric acid transfer pump seal failure results in no flow path from boric acid tank to RCS.  
 W/8 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 4  
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

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## LICENSEE EVENT REPORT (LER)

|  |        |  |                |                     |                 |                      |                 |           |                       |  |  |  |  |          |                               |      |           |  |  |                    |  |  |
|--|--------|--|----------------|---------------------|-----------------|----------------------|-----------------|-----------|-----------------------|--|--|--|--|----------|-------------------------------|------|-----------|--|--|--------------------|--|--|
| FACILITY NAME (1)<br>Turkey Point Unit 3   |        |  |                |                     |                 |                      |                 |           |                       | DOCKET NUMBER (2)<br>0 5 0 0 0 2 5 0                         |  |  |  |          |                               |      |           |  |  | PAGE (3)<br>1 OF 3 |  |  |
| TITLE (4)<br>Boric Acid Transfer Pump Seal Failure Results in No Flow Path from Boric Acid Tank to Unit 3 Reactor Coolant System |        |  |                |                     |                 |                      |                 |           |                       |  |  |  |  |          |                               |      |           |  |  |                    |  |  |
| 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<br>N/A |  |  |  |  |          | DOCKET NUMBER(S)<br>0 5 0 0 0 |      |           |  |  |                    |  |  |
| 0  | 8      | 22   | 88             | 88                  | 019             | 0                    | 0               | 09        | 21                    | 88   |  |  |  |          |                               |      | 0 5 0 0 0 |  |  |                    |  |  |
| OPERATING MODE (9)   |        | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11) |                |                     |                 |                      |                 |           |                       |  |  |  |  |          |                               |      |           |  |  |                    |  |  |
| 1  |        | 20.402(b)  |                |                     |                 | 20.405(c)            |                 |           |                       | 50.73(a)(2)(iv)  |  |  |  | 73.71(b) |                               |      |           |  |  |                    |  |  |
| POWER LEVEL (10)   |        | 1,00   |                |                     |                 | 20.405(a)(1)(i)      |                 |           |                       | 50.73(a)(2)(v)   |  |  |  | 73.71(c) |                               |      |           |  |  |                    |  |  |
|  |        | 20.405(a)(1)(ii)   |                |                     |                 | 50.73(a)(2)(vi)      |                 |           |                       | OTHER (Specify in Abstract below and in Text, NRC Form 366A) |  |  |  |          |                               |      |           |  |  |                    |  |  |
|  |        | 20.405(a)(1)(iii)  |                |                     |                 | 50.73(a)(2)(vii)     |                 |           |                       |  |  |  |  |          |                               |      |           |  |  |                    |  |  |
|  |        | 20.405(a)(1)(iv)   |                |                     |                 | 50.73(a)(2)(viii)(A) |                 |           |                       |  |  |  |  |          |                               |      |           |  |  |                    |  |  |
|  |        | 20.405(a)(1)(v)  |                |                     |                 | 50.73(a)(2)(viii)(B) |                 |           |                       |  |  |  |  |          |                               |      |           |  |  |                    |  |  |
|  |        | 20.405(a)(1)(vi)   |                |                     |                 | 50.73(a)(2)(ix)      |                 |           |                       |  |  |  |  |          |                               |      |           |  |  |                    |  |  |
| LICENSEE CONTACT FOR THIS LER (12)   |        |  |                |                     |                 |                      |                 |           |                       |  |  |  |  |          |                               |      |           |  |  |                    |  |  |
| NAME<br>Edward Lyons, Compliance Engineer  |        |  |                |                     |                 |                      |                 |           |                       | TELEPHONE NUMBER<br>3 0 5 2 4 6 - 6 7 3 1                    |  |  |  |          |                               |      |           |  |  |                    |  |  |
| COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)   |        |  |                |                     |                 |                      |                 |           |                       |  |  |  |  |          |                               |      |           |  |  |                    |  |  |
| CAUSE  | SYSTEM | COMPONENT  | MANUFACTURER   | REPORTABLE TO NPROS |                 | CAUSE                | SYSTEM          | COMPONENT | MANUFACTURER          | REPORTABLE TO NPROS  |  |  |  |          |                               |      |           |  |  |                    |  |  |
| B  | CA     | SEAL   | G 2 0 0        | N                   |                 |                      |                 |           |                       |  |  |  |  |          |                               |      |           |  |  |                    |  |  |
|  |        |  |                |                     |                 |                      |                 |           |                       |  |  |  |  |          |                               |      |           |  |  |                    |  |  |
| 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 August 22, 1988, at 1757, Unit 3 entered Technical Specification 3.0.1 for 22 minutes when the 3A Boric Acid Transfer Pump (BATP) (EIIIS:CA, Component:P) was declared out of service. At the time of the event, the Unit 3 BATP's were aligned in their normal configuration, with the 3A pump aligned to the Unit 3 Charging Pumps and the 3B BATP aligned to recirculate the B Boric Acid Tank. At 1757, while making normal rounds, Operations' personnel discovered that the seal pot, which provides seal cooling water, had no visible water level and zero nitrogen pressure. Operations' personnel were directed to align the 3B pump to the Unit 3 Reactor Coolant System via the Charging pumps. This was successfully completed 22 minutes later, and the unit exited Technical Specification 3.0.1. The cause of the 3A pump being out of service was a failure of the pump seal. The pump seal was replaced and the pump returned to service. The design of the seal is being evaluated and will be modified to remove the seal pot.

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PDR ADOCK 05000250  
S PDC

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

| FACILITY NAME (1)   | DOCKET NUMBER (2) | LER NUMBER (6) |                   |                 | PAGE (3) |    |     |
|---------------------|-------------------|----------------|-------------------|-----------------|----------|----|-----|
|                     |                   | YEAR           | SEQUENTIAL NUMBER | REVISION NUMBER |          |    |     |
| Turkey Point Unit 3 | 0 5 0 0 0 2 5 0   | 8 8            | 0 1 9             | 0 0             | 0 2      | OF | 0 3 |

TEXT (If more space is required, use additional NRC Form 368A's) (17)

Description of the Event

On August 22, 1988, at 1757, Unit 3 entered Technical Specification 3.0.1 for 22 minutes when the 3A Boric Acid Transfer Pump (BATP) (EIIIS:CA, Component:P) was declared out of service. Unit 3 was operating at 100 percent power with the 4B BATP out of service for planned maintenance. Under normal operating conditions, the 4A and 4B BATP's are aligned to take suction from the A Boric Acid Tank (BAT) and discharge to the suction header of the Unit 4 Charging Pumps; the 3A BATP is aligned to take suction from the C BAT and discharge to the suction of the Unit 3 Charging Pumps; the 3B BATP is aligned to recirculate the B BAT. At the time of the event, the Unit 3 pumps were aligned in their normal configuration. At 1757, the 3A BATP was declared out of service when Operations' personnel making normal rounds, discovered that the seal pot, which contains seal cooling water under Nitrogen (N2) pressure, was under zero N2 pressure and had no visible water level. These normal rounds are performed on a four hour interval. Since the 3B BATP was aligned to recirculate the B BAT, there was no flow path established from the BAT's to the Unit 3 Reactor Coolant System (RCS). Technical Specification 3.6.d requires that during power operation, "System piping, interlocks and valves shall be operable to the extent of establishing one flow path from the boric acid tanks, and one flow path from the refueling water storage tank, to each Reactor Coolant System." Unit 3 entered Technical Specification 3.0.1 which requires that within one hour, action be initiated to shutdown the unit. Following the discovery, Operations' personnel were directed to align the 3B BATP to the Unit 3 RCS via the Charging Pumps. This was accomplished 22 minutes later at 1819, and Unit 3 exited Technical Specification 3.0.1.

Cause of the Event

The event was caused by a failure of the pump seal on the 3A BATP. The cause of the seal failure has been determined to be one of two possible failure mechanisms. The first possibility is that frequent pump starts and stops caused axial shaft movement which results in separation of the seal faces. This allows the process fluid (12% boric acid) to come in contact with the seal faces. The particles are flushed out by the seal water, however, repetitive occurrences develop a clearance between the seal faces and the pump shaft. This allows the seal water, which is at a higher pressure than the process fluid, to pass from the seal pot into the process fluid. The second potential failure mechanism involves the seal cooling lines. The routing of the lines may not promote optimal circulation of the seal cooling water. This may result in the seal faces becoming dry and failing.

This event is reportable because the current Turkey Point Technical Specifications do not allow any time to realign operable portions of the system that are normally used to recirculate the BAT's.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

| FACILITY NAME (1)   | DOCKET NUMBER (2) | LER NUMBER (6) |                   |                 | PAGE (3) |    |    |
|---------------------|-------------------|----------------|-------------------|-----------------|----------|----|----|
|                     |                   | YEAR           | SEQUENTIAL NUMBER | REVISION NUMBER |          |    |    |
| Turkey Point Unit 3 | 05000250          | 88             | 019               | 00              | 03       | OF | 03 |

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

Analysis

No credit is taken for the concentrated boric acid contained in the BAT's in any of the design basis transients. Sufficient shutdown capability for the most severe anticipated cooldown transient (main steam line break) assuming the most reactive control cluster to be fully withdrawn is achieved via the use of boron from the refueling water storage tank through the safety injection system. The BAT's and the BATP's provide a source of concentrated boric acid to be added to the reactor coolant system to offset reactivity changes caused by normal plant operating transients, changes in power levels, and in order to maintain shutdown conditions. An additional means of providing borated water is from the refueling water storage tank through the charging pumps to the RCS. These flow paths were available throughout the event. Based on the above, the health and safety of the public were not affected.

Corrective Actions

- 1) The 3B BATP was realigned to provide a flow path to the Unit 3 RCS.
- 2) The 3A BATP seal was replaced and the pump returned to service.
- 3) The current seal design is under evaluation and will be modified to remove the seal pot. The Engineering work required for this modification is scheduled to be completed by December 31, 1988.
- 4) Turkey Point has submitted draft Technical Specifications to the NRC for review. This draft version would provide an action statement to realign the required flow paths under the situation described in this report.

Additional Information

The BATP's are manufactured by Goulds, Inc model number 3196-ST-8. The seals are manufactured by Durametallic.

Similar occurrences: previous BATP seal failures have been reported in LER 250-88-05 and LER 250-87-17.



SEPTEMBER 21 1988

L-88-423  
10 CFR 50.73

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

Gentlemen:

Re: Turkey Point Unit 3  
Docket No. 50-250  
Reportable Event: 88-19  
Date of Event: August 22, 1988  
Boric Acid Transfer Pump Seal Results in No Flow Path  
from Boric Acid Tank to Unit 3 Reactor Coolant System

The attached Licensee Event Report (LER) is being submitted pursuant to the requirements of 10 CFR 50.73 to provide notification of the subject event.

Very truly yours,

*DA Sager*  
W. F. Conway  
Senior Vice President - Nuclear

WFC/SDF/gp

Attachment

cc: Dr. J. Nelson Grace, Regional Administrator,  
Region II, USNRC  
Senior Resident Inspector, USNRC, Turkey Point Plant

*IF22  
11*

