



**Entergy
Operations**

Entergy Operations, Inc.

P.O. Box 8

Killona, LA 70066

Tel 504-739-6650

W3F1-97-0079

A4.05

PR

April 16, 1997

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

Subject: Waterford 3 SES
Docket No. 50-382
License No. NPF-38
Reporting of Licensee Event Report

Gentlemen:

Attached is Licensee Event Report (LER) Number 97-008-00 for Waterford Steam Electric Station Unit 3. This LER reports the discovery that a surveillance performed in 1988 used a quantity of Tri-Sodium Phosphate that exceeded Technical Specification (TS) Requirements. This LER is submitted in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by TS.

Very truly yours,

T.R. Leonard
General Manager
Plant Operations

TRL/PRS/GCS/tjs
Attachment

180033

cc: E.W. Merschoff (NRC Region IV), C.P. Patel (NRC-NRR),
A.L. Garibaldi, J.T. Wheelock - INPO Records Center, R.B. McGehee,
N.S. Reynolds, NRC Resident Inspectors Office, Administrator - LRPD

9704180175 970416
PDR ADOCK 05000382
S PDR



111
Le22

| NRC FORM 366 <small>(4-95)</small> | | U.S. NUCLEAR REGULATORY COMMISSION | | APPROVED BY OMB NO. 3150-0104 EXPIRES 04/30/98 <small>ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), 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.</small> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-------------------|---|------------------|---|---|---------------|--|---|----------------|-------------------|-------------------|------------------|----|-----------------|----------------|---|-------------------|-------|------------------|-------|-------------------|---------------|----|-----------------|-------|--------------------|-------------|--|----------------|---|-------------------|-------------|--|------------------|
| <h2 style="margin: 0;">LICENSEE EVENT REPORT (LER)</h2> <p style="margin: 0;">(See reverse for required number of digits/characters for each block)</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FACILITY NAME (1) WATERFORD STEAM ELECTRIC STATION UNIT 3 | | | | DOCKET NUMBER (2) <div style="display: flex; justify-content: space-around;"> 05000 382 </div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PAGE (3) <div style="display: flex; justify-content: flex-end;"> 1 OF 5 </div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TITLE (4) INCORRECT QUANTITY OF TRI-SODIUM PHOSPHATE USED FOR ECCS SUBSYSTEM PH DETERMINATION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EVENT DATE (5) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:33%;">MONTH</th> <th style="width:33%;">DAY</th> <th style="width:33%;">YEAR</th> </tr> <tr> <td style="text-align: center;">04</td> <td style="text-align: center;">19</td> <td style="text-align: center;">88</td> </tr> </table> | | MONTH | DAY | YEAR | 04 | 19 | 88 | LER NUMBER (6) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:33%;">YEAR</th> <th style="width:33%;">SEQUENTIAL NUMBER</th> <th style="width:33%;">REVISION NUMBER</th> </tr> <tr> <td style="text-align: center;">97</td> <td style="text-align: center;">008</td> <td style="text-align: center;">00</td> </tr> </table> | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | 97 | 008 | 00 | REPORT DATE (7) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:33%;">MONTH</th> <th style="width:33%;">DAY</th> <th style="width:33%;">YEAR</th> </tr> <tr> <td style="text-align: center;">04</td> <td style="text-align: center;">16</td> <td style="text-align: center;">97</td> </tr> </table> | | MONTH | DAY | YEAR | 04 | 16 | 97 | | | | | | | | | | | |
| MONTH | DAY | YEAR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 04 | 19 | 88 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 97 | 008 | 00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MONTH | DAY | YEAR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 04 | 16 | 97 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OPERATING MODE (9) <div style="display: flex; justify-content: space-between;"> 6 </div> | | OTHER FACILITIES INVOLVED (8) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:60%;">FACILITY NAME</th> <th style="width:40%;">DOCKET NUMBER</th> </tr> <tr> <td style="text-align: center;">N/A</td> <td style="text-align: center;">05000</td> </tr> <tr> <td style="text-align: center;">N/A</td> <td style="text-align: center;">05000</td> </tr> </table> | | | | FACILITY NAME | DOCKET NUMBER | N/A | 05000 | N/A | 05000 | | | | | | | | | | | | | | | | | | | | | | | |
| FACILITY NAME | DOCKET NUMBER | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| N/A | 05000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| N/A | 05000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| POWER LEVEL (10) <div style="display: flex; justify-content: space-between;"> 100 </div> | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:33%;">20.2201(b)</td> <td style="width:33%;">20.2203(a)(2)(v)</td> <td style="width:33%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width:33%;">50.73(a)(2)(i)</td> <td style="width:33%;">50.73(a)(2)(viii)</td> </tr> <tr> <td>20.2203(a)(1)</td> <td>20.2203(a)(3)(i)</td> <td></td> <td>50.73(a)(2)(ii)</td> <td>50.73(a)(2)(x)</td> </tr> <tr> <td>20.2203(a)(2)(i)</td> <td>20.2203(a)(3)(ii)</td> <td></td> <td>50.73(a)(2)(iii)</td> <td>73.71</td> </tr> <tr> <td>20.2203(a)(2)(ii)</td> <td>20.2203(a)(4)</td> <td></td> <td>50.73(a)(2)(iv)</td> <td>OTHER</td> </tr> <tr> <td>20.2203(a)(2)(iii)</td> <td>50.36(c)(1)</td> <td></td> <td>50.73(a)(2)(v)</td> <td rowspan="2">Specify in Abstract below or in NRC Form 366A</td> </tr> <tr> <td>20.2203(a)(2)(iv)</td> <td>50.36(c)(2)</td> <td></td> <td>50.73(a)(2)(vii)</td> </tr> </table> | | | | 20.2201(b) | 20.2203(a)(2)(v) | <input checked="" type="checkbox"/> | 50.73(a)(2)(i) | 50.73(a)(2)(viii) | 20.2203(a)(1) | 20.2203(a)(3)(i) | | 50.73(a)(2)(ii) | 50.73(a)(2)(x) | 20.2203(a)(2)(i) | 20.2203(a)(3)(ii) | | 50.73(a)(2)(iii) | 73.71 | 20.2203(a)(2)(ii) | 20.2203(a)(4) | | 50.73(a)(2)(iv) | OTHER | 20.2203(a)(2)(iii) | 50.36(c)(1) | | 50.73(a)(2)(v) | Specify in Abstract below or in NRC Form 366A | 20.2203(a)(2)(iv) | 50.36(c)(2) | | 50.73(a)(2)(vii) |
| 20.2201(b) | 20.2203(a)(2)(v) | <input checked="" type="checkbox"/> | 50.73(a)(2)(i) | 50.73(a)(2)(viii) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20.2203(a)(1) | 20.2203(a)(3)(i) | | 50.73(a)(2)(ii) | 50.73(a)(2)(x) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20.2203(a)(2)(i) | 20.2203(a)(3)(ii) | | 50.73(a)(2)(iii) | 73.71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20.2203(a)(2)(ii) | 20.2203(a)(4) | | 50.73(a)(2)(iv) | OTHER | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20.2203(a)(2)(iii) | 50.36(c)(1) | | 50.73(a)(2)(v) | Specify in Abstract below or in NRC Form 366A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20.2203(a)(2)(iv) | 50.36(c)(2) | | 50.73(a)(2)(vii) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LICENSEE CONTACT FOR THIS LER (12) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NAME DAVE MADERE, CHEMISTRY SUPERINTENDENT | | | | TELEPHONE NUMBER (Include Area Code) (504) 464-3129 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPROS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SUPPLEMENTAL REPORT EXPECTED (14) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;"> YES <small>(If yes, complete EXPECTED SUBMISSION DATE).</small> </td> <td style="width:50%; text-align: center;"> NO </td> </tr> </table> | | | | | YES <small>(If yes, complete EXPECTED SUBMISSION DATE).</small> | NO | EXPECTED SUBMISSION DATE (15) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:33%;">MONTH</th> <th style="width:33%;">DAY</th> <th style="width:33%;">YEAR</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table> | | MONTH | DAY | YEAR | | | | | | | | | | | | | | | | | | | | | | | |
| YES <small>(If yes, complete EXPECTED SUBMISSION DATE).</small> | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MONTH | DAY | YEAR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16) <p>On March 17, 1997, at 1430 hours, Chemistry personnel discovered that Technical Specification (TS) surveillance requirement 4.5.2.d.4 had been performed on April 19, 1988, with a quantity of Tri-Sodium Phosphate (TSP) that exceeded TS requirements. Specifically, TS 4.5.2.d.4 requires verifying that when a representative sample of 3.99 to 4.01 grams of TSP from a TSP basket is submerged, without agitation, in 3.9 to 4.1 liters of water at 110 degrees F to 130 degrees F and borated within Refueling Water Storage Pool (RWSP) concentration limits, the pH of the mixed solution is raised to greater than or equal to 7 within 3 hours. Contrary to that requirement, however, the sample of TSP used on April 19, 1988, contained 4.032 grams of TSP. The root cause of this event is personnel error. The employees who performed the surveillance and the supervisor who reviewed and approved the surveillance documentation failed to recognize the error. Upon discovery, a corrective action document was generated. All similar surveillances performed since 1988 were verified to comply with TS requirements. Theoretical calculations demonstrated that surveillance results were not negatively impacted by the incorrect sample size. The pH of the mixed solution would have been within TS requirements. This event did not compromise the health and safety of the public.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**REQUIRED NUMBER OF DIGITS/CHARACTERS
FOR EACH BLOCK**

| BLOCK NUMBER | NUMBER OF DIGITS/CHARACTERS | TITLE |
|-----------------|---|------------------------------|
| 1 | UP TO 46 | FACILITY NAME |
| 2 | 8 TOTAL 3 IN ADDITION TO 05000 | DOCKET NUMBER |
| 3 | VARIES | PAGE NUMBER |
| 4 | UP TO 76 | TITLE |
| 5 | 6 TOTAL 2 PER BLOCK | EVENT DATE |
| 6 | 7 TOTAL 2 FOR YEAR 3 FOR SEQUENTIAL NUMBER 2 FOR REVISION NUMBER | LER NUMBER |
| 7 | 6 TOTAL 2 PER BLOCK | REPORT DATE |
| 8 | UP TO 18 -- FACILITY NAME 8 TOTAL -- DOCKET NUMBER 3 IN ADDITION TO 05000 | OTHER FACILITIES INVOLVED |
| 9 | 1 | OPERATING MODE |
| 10 | 3 | POWER LEVEL |
| 11 | 1 CHECK BOX THAT APPLIES | REQUIREMENTS OF 10 CFR |
| 12 | UP TO 50 FOR NAME 14 FOR TELEPHONE | LICENSEE CONTACT |
| 13 | CAUSE VARIES 2 FOR SYSTEM 4 FOR COMPONENT 4 FOR MANUFACTURER NPRDS VARIES | EACH COMPONENT FAILURE |
| 14 | 1 CHECK BOX THAT APPLIES | SUPPLEMENTAL REPORT EXPECTED |
| 15 | 6 TOTAL 2 PER BLOCK | EXPECTED SUBMISSION DATE |

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

| FACILITY NAME (1) | DOCKET | LER NUMBER (6) | | | PAGE (3) |
|---|--------------|----------------|----------------------|--------------------|----------|
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | |
| WATERFORD STEAM ELECTRIC STATION UNIT 3 | 05000 382 | 97 | -- 008 | -- 00 | 2 OF 5 |

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

REPORTABLE OCCURRENCE

Technical Specification (TS) surveillance requirement 4.5.2.d.4 requires that each Emergency Core Cooling System (ECCS - BP, BQ, BE) subsystem be demonstrated OPERABLE, at least once per 18 months, by verifying that when a representative sample of 4 +/- 0.01 grams of Tri-Sodium Phosphate (TSP) from a TSP storage basket is submerged, without agitation, in 4 +/- 0.1 liters of 120 +/- 10 degrees Fahrenheit water borated within Refueling Water Storage Pool (ECCS - BP) boron concentration limits, the pH of the mixed solution is raised to greater than or equal to 7 within 3 hours. Contrary to that requirement, when performing TS surveillance requirement 4.5.2.d.4 on April 19, 1988, the TSP sample contained 4.032 grams of TSP -- 0.022 grams greater than allowed by TS. Therefore, pursuant to 10CFR50.73(a)(2)(i)(B), this condition is reportable as a condition prohibited by TS.

INITIAL CONDITIONS

On April 19, 1988, Waterford 3 was shutdown in Mode 6. No major equipment was out of service specific to this event and no TS Limiting Conditions for Operation were in effect specific to this event.

EVENT DESCRIPTION

On March 17, 1997, at 1430 hours, while performing research to support a request to amend TS surveillance requirements 4.5.2.d.3 and 4.5.2.d.4, Chemistry personnel discovered that TS surveillance requirement 4.5.2.d.4 had been performed on April 19, 1988, with a quantity of Tri-Sodium Phosphate (TSP) in excess of TS requirements. Specifically, instead of using 4 +/- 0.01 grams of TSP, the surveillance was performed with 4.032 grains of TSP.

Granular TSP is stored in the containment lower level to raise the pH of the water available following a postulated Loss of Coolant Accident (LOCA). The TSP is stored in

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

| FACILITY NAME (1) | DOCKET | LER NUMBER (6) | | | PAGE (3) |
|---|--------------|----------------|----------------------|--------------------|----------|
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | |
| WATERFORD STEAM ELECTRIC STATION UNIT 3 | 05000 382 | 97 | -- 008 -- | 00 | 3 OF 5 |

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

stainless steel baskets with mesh screen sides near the Safety Injection sump. As the pH of the water increases, more radioactive iodine is kept in solution and the amount of airborne radioactive leakage is decreased. This also lessens the potential for boric acid solution reacting with galvanized metal in containment to release hydrogen. An additional advantage of higher pH is the beneficial reduction in chloride stress corrosion cracking of metal components in the containment following an accident. Branch Technical position MTEB 6-1 entitled, "pH for Emergency Coolant Water for PWRs" recommends a minimum pH of 7.0 to reduce chloride stress corrosion cracking of those components.

CAUSAL FACTORS

The root cause of this event is personnel error. The employees who performed the surveillance and the supervisor who reviewed and approved the surveillance documentation failed to recognize the error. In addition, a contributing factor may have been the similarity between the quantity of TSP required (4.0 +/- 0.01 grams) and the quantity of water (4.0 +/- 0.1 liters) required with a different tolerance band for each.

CORRECTIVE MEASURES

Upon discovery of this condition, Condition Report 97-0629 was generated to enter this condition into the corrective action program. A review was performed to verify that all previous performances of TS surveillance requirement 4.5.2.d.4 were conducted satisfactorily. No additional discrepancies were identified. Data from all previous surveillances indicated that the correct amount of TSP was used and that surveillance results met TS requirements.

The effects of using a TSP sample 0.022 grams larger than allowed by TS was evaluated. Theoretical calculations using 4.032 grams and 4.00 grams of TSP produced a pH difference of 0.01 pH units when dissolved in the same boric acid concentration that was used for performance of the surveillance. The results indicate

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

| FACILITY NAME (1) | DOCKET | LER NUMBER (6) | | | PAGE (3) |
|---|--------------|----------------|----------------------|--------------------|----------|
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | |
| WATERFORD STEAM ELECTRIC STATION UNIT 3 | 05000 382 | 97 | -- 008 | -- 00 | 4 OF 5 |
| | | | | | |

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

that the 1988 surveillance would have satisfied the pH requirements if the correct sample size had been used.

To prevent the recurrence of similar conditions, the following corrective actions are planned:

1. Condition Report 97-0629 will be reviewed with all members of the Chemistry Department stressing the need for procedure compliance and proper post job document review. In addition, emphasis will be placed on employment of the Stop-Think-Act-Review (STAR) principles in performance of chemistry surveillances and review of chemistry data.
2. As an enhancement, the Chemistry Department will write a new procedure for performance of this infrequently performed surveillance. The procedure will incorporate a specific data sheet to record the quantity of TSP required, the volume of water used, the temperature of the solution and the high and low band limits for each of those parameters.

SAFETY SIGNIFICANCE

Effects of the excessive amount of TSP were evaluated. Calculations using 4.032 grams and 4.00 grams of TSP dissolved in the same boric acid concentration that was used for the performance of the surveillance resulted in a pH difference of 0.01 units. The final surveillance results indicated a pH of 7.11. By subtracting the error that would result from this excessive TSP (0.01 units), the sample results (7.10) would still be greater than or equal to 7.0. Therefore, this event did not compromise the health and safety of the public.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

| FACILITY NAME (1) | DOCKET | LER NUMBER (6) | | | PAGE (3) |
|---|--------------|----------------|----------------------|--------------------|----------|
| WATERFORD STEAM ELECTRIC STATION UNIT 3 | 05000 382 | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | 5 OF 5 |
| | | 97 | 008 | 00 | |

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

SIMILAR EVENTS

No previous Licensee Event Reports were identified that involved exceeding TS requirements during performance of TS 4.5.2.d.