



**Entergy
Operations**

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D. F. Packer

General Manager
Plant Operations
Waterford 3

W3F1-94-0145

A4.05

PR

September 15, 1994

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 Number LER-94-011-00 for Waterford Steam Electric Station Unit 3. This is submitted as a voluntary Licensee Event Report.

Very truly yours,

D.F. Packer
General Manager
Plant Operations

DFP/RWP/ssf
Attachment

cc: L.J. Callan, NRC Region IV
G.L. Florreich
J.T. Wheelock - INPO Records Center
R.B. McGehee
N.S. Reynolds
NRC Resident Inspectors Office
Administrator - LRPD

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LICENSEE EVENT REPORT (LER)

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

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.

FACILITY NAME (1)

Waterford Steam Electric Station Unit 3

DOCKET NUMBER (2)

05000 382

PAGE (3)

1 OF 07

TITLE (4)

Boron Dilution Due to Improper Makeup Blend

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
07	20	94	94	011	00	09	15	94	N/A	05000
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
1			20.402(b)			20.405(c)			50.73(a)(2)(iv)	
POWER LEVEL (10)			20.405(a)(1)(i)			50.36(c)(1)			50.73(a)(2)(v)	
100			20.405(a)(1)(ii)			50.36(c)(2)			50.73(a)(2)(vii)	
			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)	

X OTHER
(Specify in Abstract below and in Text, NRC Form 366A)

LICENSEE CONTACT FOR THIS LER (12)

NAME

D.C. Matheny, Operations Superintendent

TELEPHONE NUMBER (Include Area Code)

(504) 464-3178

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On July 20, 1994 at 2000 hours, Waterford 3 was in Mode 1 at 100% power when a Primary Nuclear Plant Operator (PNPO) commenced the addition of an improper blend of makeup water to the Volume Control Tank (VCT), which caused the Reactor Coolant System (RCS) temperature and reactor power to increase. Upon realizing what happened, the PNPO added boric acid to the RCS causing the RCS cold leg temperature to drop below 544°F and reactor power to drop to 97%. The PNPO stabilized the plant by reducing the turbine load.

The root cause of this event was personnel error due to a lack of self-checking by not ensuring intended actions were correct. A contributing cause was neglecting to communicate information to the Control Room Supervisor (CRS).

Corrective action included counseling the PNPO in accordance with the Improving Human Performance (IHP) Program. Further action will be to have Operations Personnel review this event. This event did not compromise the health and safety of the public.

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

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LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (6)			PAGE (3)
Waterford Steam Electric Station Unit 3		05000 382		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	02 OF 07
				94	011	00	

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

REPORTABLE OCCURRENCE

On July 20, 1994 at 2000 hours, Waterford 3 was operating in Mode 1 at 100% power when a PNPO commenced the addition of an improper blend of makeup water to the VCT (EIIIS Identifier CB), which caused the RCS temperature to rise and reactor power to increase to 100.381%. Upon realizing what happened, the PNPO added boric acid to the RCS causing the RCS cold leg temperature to drop below 544°F and reactor power to drop to 97%. Technical Specification (TS) 3.2.6 requires the RCS cold leg temperature to be maintained between 544°F and 558°F and its associated action statement requires deviations outside the limit to be restored within two hours or reduce thermal power to less than 30% of rated thermal power within the next four hours. As required, the TS 3.2.6 action was entered, at 2030 hours, because of the drop in RCS cold leg temperature. The PNPO commenced to stabilize the plant by reducing the turbine load to stop the drop in temperature and at 2108 hours the RCS cold leg temperature was greater than 544°F, allowing the TS 3.2.6 action to be exited. At approximately 2138 hours, reactor power was stable at 100%

It has been determined that the event does not meet the reporting threshold of 10CFR50.73. However, Waterford 3 believes that this issue may be of generic concern; thus, this report is being provided as a voluntary LER.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Waterford Steam Electric Station Unit 3	05000 382	94	011	00	03 OF 07

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INITIAL CONDITIONS

Plant Power	100%
Plant Operating Mode	Mode 1
Procedures Being Performed Specific to this Event	OP-002-005
Technical Specification LCO's in Effect Specific to this Event	3.2.6
Major Equipment out of Service Specific to this Event	None

EVENT SEQUENCE

On July 20, 1994 at approximately 2000 hours, the PNPO decided to perform a blended makeup to the VCT, while the VCT level was at 47%. This evolution is covered in operating procedure OP-002-005, Section 6.13. The PNPO thought he had completed steps for a blended makeup with the exception of opening valve CVC-510 and starting a boric acid makeup pump, when an annunciator on CP-8 for Safety Injection Tank Low Pressure activated. The PNPO immediately went to CP-8 to acknowledge the annunciator, unaware that water was being injected into the VCT. Because the Computer Alarm Printer, which indicates changes in valve position, was malfunctioning, it cannot be determined whether CVC-510 was left open from the last blend or whether CVC-510 was opened at some point during the current blend. The PNPO then commenced to pressurize the Safety Injection Tank with nitrogen in order to restore system pressure to within its required band. Meanwhile, the VCT level continued to rise due to the makeup, which only contained pure water. At approximately 2010 hours, the Control Room Supervisor (CRS) trainee, who was a licensed reactor operator, noticed that the primary makeup water (PMU) totalizer was counting upward and 100 gpm of PMU flow was entering the VCT. The CRS trainee immediately informed the PNPO of the VCT level rise, who in turn secured the makeup to the VCT, thereby securing the addition of pure water to the RCS. The PNPO determined that

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approximately 710 gallons of water had been added to the VCT. RCS average temperature had risen from 576°F to 577°F and reactor power had risen from 100.0% to a peak of 100.381%. The PNPO then added 24 gallons of boric acid to the VCT, but RCS temperature continued to rise. The PNPO then added 150 gallons of boric acid to the suction of the charging pumps. Shortly after this addition of boric acid, RCS cold leg temperature dropped five degrees, to 541.5°F, and reactor power dropped to 97%. It was at this point that the PNPO informed the regular On-Shift CRS that he had problems with trying to stabilize the plant. TS 3.2.6 action was entered at 2030 hours because of the drop in RCS cold leg temperature. The PNPO commenced reducing turbine load to stop the drop in temperature. Turbine load was reduced by seven megawatts. At 2108 hours, RCS cold leg temperature was greater than 544°F and TS 3.2.6 was exited. At approximately 2138 hours, reactor power was stable at 100%.

CAUSAL FACTORS

The root cause of this event was personnel error due to a lack of self-checking to ensure intended actions were correct. Contributing causes were: 1) The PNPO was not expecting the resulting system response due to the actions; and, 2) The PNPO failed to communicate information to the CRS.

IMMEDIATE CORRECTIVE MEASURES

The plant was stabilized through a combination of boric acid addition and turbine load reduction.

NRC FORM 366A <small>(5-92)</small>		U.S. NUCLEAR REGULATORY COMMISSION APPROVED BY OMB NO. 3150-0104 EXPIRES 5/31/95 <small>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.</small>	
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		94	011
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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

ACTIONS TO PREVENT RECURRENCE

The following constitutes the corrective action either complete or pending for this event.

Shift Supervisor:

Counseled PNPO in accordance with the IHP Program.

Was instructed (as was the CRS) by the Operations & Maintenance (O&M) Manager to perform increased monitoring of the PNPO.

Operations Superintendent:

Discussed at length the event with the PNPO and the CRS.

Discussed the event during a departmental meeting, stressing the important and sensitive nature of reactivity management.

Issued a letter to all licensed operators which addresses the event and reactivity management.

Will meet with all Shift Supervisors (SS) and discuss the importance of this event, reactivity management, and proper supervision.

O&M Manager:

Discussed at length the event with the PNPO, CRS and SS.

Chartered an Event Review Team to investigate the event and its root cause.

NRC FORM 366A (5-92)		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB NO. 3150-0104 EXPIRES 5/31/95	
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 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.	
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General Manager, Plant Operations:

Vice-President Nuclear:

Is currently conducting seminars with all licensed operators to discuss conservative actions, proper communications, teamwork, and getting supervisors involved with problems.

Issued a confidential letter to the Plant Manager outlining certain considerations, actions, and supervisory discussions concerning the PNPO involved.

Had meeting with Operations Superintendent, O&M Manager, SS, CRS, Training Personnel and Shift Technical Advisors to discuss this event emphasizing the importance of conservative decision making with respect to reactor manipulations and communications.

Discussed at length the event with the Operations Superintendent and the O&M Manager.

Will discuss the event with the PNPO, CRS and SS involved.

Will discuss the event and reactivity management in general with all SS.

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Waterford Steam Electric Station Unit 3	05000 382	94	011	00	07 OF 07

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Training Department:

Will conduct training with all licensed operators and Shift Technical Advisors on reactivity management with emphasis on system response to boric acid and makeup additions, and on the conservative decision making process.

SAFETY SIGNIFICANCE

The event did not compromise the health and safety of the public in that the plant was stabilized within a time frame that did not violate technical specifications or actuate safety features. All systems functioned as designed and no equipment failures were observed during this event.

SIMILAR EVENTS

There was one similar event involving boron dilution resulting from the inadvertent addition of unborated water to the RCS, which was reported in voluntary LER-94-10. These events are different in that this event involved the addition of an improper blend of makeup to the RCS and the other event involved the routing of purge flow from the Letdown Radiation Monitor to the RCS.