



Entergy

Entergy Operations, Inc.

P.O. Box B  
Killona, LA 70066  
Tel 504-464-3120

**Charles M. Dugger**

General Manager  
Plant Operations  
Waterford 3

W3F1-96-0172

A4.05

PR

November 16, 1996

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-96-001-01 for Waterford Steam Electric Station Unit 3. This revision documents more accurately the number of times when Safety Injection Tank levels exceeded Technical Specification limits and by how much those limits were exceeded. This Licensee Event Report is submitted in accordance with 10CFR50.73(a)(2)(i)(B).

Very truly yours,

C.M. Dugger  
General Manager  
Plant Operations

CMD/WDM/tjs  
Attachment

9611210060 961116  
PDR ADOCK 05000382  
S PDR

210015

11  
1022

Reporting of Licensee Event Report (LER 96-001-01)  
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Page 2  
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cc: L.J. Callan, 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

## LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)

DOCKET NUMBER (2)

PAGE (3)

WATERFORD STEAM ELECTRIC STATION UNIT 3

05000 382

1 OF 6

TITLE (4)

REVISION 1 TO ENTERING TECH. SPEC. 3.0.3 DUE TO SIT LEVELS READING HIGH

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 NAME	DOCKET NUMBER
11	07	95	96	006	01	11	16	96	N/A	05000
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
1			<input checked="" type="checkbox"/> 20.2201(b) <input type="checkbox"/> 20.2203(a)(2)(v) <input type="checkbox"/> 50.73(a)(2)(i) <input type="checkbox"/> 50.73(a)(2)(viii)							
POWER LEVEL (10)			20.2203(a)(1) <input type="checkbox"/> 20.2203(a)(3)(i) <input type="checkbox"/> 50.73(a)(2)(ii) <input type="checkbox"/> 50.73(a)(2)(x)							
100			20.2203(a)(2)(i) <input type="checkbox"/> 20.2203(a)(3)(ii) <input type="checkbox"/> 50.73(a)(2)(iii) <input type="checkbox"/> 73.71							
			20.2203(a)(2)(ii) <input type="checkbox"/> 20.2203(a)(4) <input type="checkbox"/> 50.73(a)(2)(iv) <input type="checkbox"/> OTHER							
			20.2203(a)(2)(iii) <input type="checkbox"/> 50.36(c)(1) <input type="checkbox"/> 50.73(a)(2)(v) <input type="checkbox"/> Specify in Abstract below or in NRC Form 366A							
			20.2203(a)(2)(iv) <input type="checkbox"/> 50.36(c)(2) <input type="checkbox"/> 50.73(a)(2)(vii) <input type="checkbox"/>							

## LICENSEE CONTACT FOR THIS LER (12)

NAME

TELEPHONE NUMBER (Include Area Code)

J.M. LAQUE, SUPERINTENDENT, SYSTEM ENGINEERING

(504) 739-6630

## 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)

EXPECTED  
SUBMISSION  
DATE (15)

MONTH DAY YEAR

YES

(If yes, complete EXPECTED SUBMISSION DATE).

X

NO

## ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On November 7, 1995, it was discovered that incorrect assumptions had been used in the Safety Injection Tank (SIT) level transmitter calibration calculations (Refer to LER 95-005-00, dated 12/4/95). Charts were prepared for use by the Operations staff, to correlate actual wide and narrow range SIT levels with control board indications. Additionally, the instrumentation was re-calibrated in order to make the indication devices transparent to any errors in the transmitter calibrations. Subsequent to an independent review by ABB-CE, some calculation input assumptions were changed. On January 11, 1996, during installation of a Temporary Alteration to correct the level indications, Technical Specification 3.0.3 was entered for approximately fourteen minutes, when it was determined that the Safety Injection Tanks (SIT) 1B and 2B narrow range control board level indications were reading approximately 1% higher than the upper Technical Specification allowed value of 83.8%. The SIT's were immediately drained to within Technical Specification allowed values and declared operable. T.S. 3.0.3 was then exited. The root cause for this condition is attributed to changing calibration calculation input assumptions without prior consideration of the impact to indicated SIT levels. 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

LICENSEE EVENT REPORT (LER)  
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WATERFORD STEAM ELECTRIC STATION UNIT 3	05000 382	96	-- 001	-- 01	2 OF 6

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

## REPORTABLE OCCURRENCE

On January 11, 1996, at 1400, it was determined that the Safety Injection Tanks (SIT) 1B and 2B (EIS Identifier BP-TK) narrow range level indications (EIS Identifier NA-BP-LI) were approx. 1% higher than the upper Technical Specification allowed value of 83.8%. When it was noted that the levels were higher than the Technical Specification allowed, the SIT's were declared inoperable and Technical Specification 3.0.3 was entered. The SIT's were immediately drained to within Technical Specification allowed values and then declared operable. Technical Specification 3.0.3 was then exited at 1414 hours. This is reportable as a Technical Specification prohibited operation or condition under the provisions of 10CFR50.73(a)(2)(i)(B).

## INITIAL CONDITIONS

At the time this condition was identified, Waterford 3 was operating in MODE 1 at approximately 100 percent power. There was no major equipment out of service specific to this event and no Technical Specification Limiting Conditions for Operation (LCOs) were in effect specific to this event at the time this condition was discovered.

## EVENT DESCRIPTION

On November 7, 1995, it was discovered that an incorrect density value for borated water and an inconsistent temperature assumption had been used in the SIT level transmitter calibration calculations (Refer to LER 95-005, dated 12/4/95). As an immediate corrective action, charts were prepared to correlate actual wide and narrow range SIT levels with indicated levels. This chart also included compensations for all errors identified in the Safety Injection Tank narrow range calibration calculation.

As part of the corrective action for Condition Reports 95-1126 and 95-1144, which were generated to investigate inconsistencies or errors in the calibrations performed on Rosemount differential pressure type transmitters, the instrumentation loop was re-calibrated to compensate for all errors introduced in the SIT narrow range level loops.



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This also made the indication devices transparent to any errors in the transmitter calibrations. As part of this effort, the calculations were sent to ABB-CE for independent review and verification. In the discussions with ABB-CE and in the development of the revised SIT level calculation, certain input criteria and assumptions were changed. Below is a listing of the changes:

	Previous Calculation	Current Calculation
Process Temperature	120 degrees F	115 degrees F
Process Pressure	624.7 psig	612.5 psig
SIT Boration	2300 ppm	2200 ppm
Impulse Leg	Borated Water (Assumed)	Demin. Water (Assumed)
Solution Specific		
Gravity Calc. Method	W3 method	ABB-CE Method

It is important to note that, although the input assumptions and values were changed to more accurately reflect the conditions seen by the level transmitters, the original instrumentation calibration calculation was not incorrect. The new assumptions provided by ABB-CE were better suited for the system conditions.

As part of the corrective actions for this event, Temporary Alteration 95-022 was installed to correct the induced error in the SIT level transmitters. The Temporary Alteration consisted of a recalibration of the Process Analog Control (PAC) portion of the SIT level instrumentation loop within their allowable limits. The Process Analog Control portion of the loop is located outside of the Containment, therefore this Temporary Alteration would preclude personnel from receiving the radiation exposure and heat stress associated with entering the Containment at power. It should be noted, however, that the local level transmitters will be recalibrated and the Temporary Alteration removed, when the transmitters can be accessed without undue exposure, at a later date.

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During the installation of Temporary Alteration 95-022, when the first instrument loop was recalibrated, the Control Room staff noticed that the SIT level did not drop the expected approximate 2.5% but actually dropped approximately 1.0 %. After consultation with engineering personnel it was concluded that the indication difference was due to the revised calibration calculation input assumptions. The majority of the difference was a result of changing an input assumption to demineralized water in the impulse leg of the transmitter vice borated water. With this new information, Operations personnel determined that the actual water levels in SITs 1B & 2B were approximately 1% over the Technical Specification limits. Technical Specification (TS) 3.0.3 was entered and the levels in SITs 1B and 2B were immediately lowered to an acceptable level. Technical Specification 3.0.3 was then exited.

## CAUSAL FACTORS

The root cause for this event is attributed to poor work practices in that, when the calibration calculation input assumptions were changed it was not identified that the data in the charts/tables provided to the Operations staff would also be affected.

## IMMEDIATE CORRECTIVE MEASURES

The control room staff immediately lowered the SIT levels until they were within specified ranges for compliance with Technical Specifications.

Temporary Alteration 95-022 was installed to correct the induced error in the SIT level transmitters. The Process Analog Control portion of the level measurement loops were recalibrated, thus allowing the level measurement loops to respond normally.

## ACTIONS TO PREVENT RECURRENCE

The event was reviewed with personnel of the Calibration Task Force, assembled pursuant to the corrective actions of LER 95-05-00, to stress the need to identify all affected equipment prior to revising assumptions.

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This event was reviewed with Engineering personnel as part of Engineering Support Personnel (ESP) Continuing Training stressing the need to identify all affected equipment and procedures prior to revising calculation assumptions.

## SAFETY SIGNIFICANCE

On August 15, 1995, ABB/CE issued a new Loss of Coolant Accident (LOCA) Safety analysis to Waterford, ST-95-0468, to aid with a Technical Specification submittal which requests permission to expand the Waterford 3 Safety Injection tank level and pressure Technical Specification ranges. The analysis, which analyzed the SIT's for the worst case conditions, used for its major design inputs a Minimum level of 36.1%, Maximum level of 87.5%, Minimum pressure 558.7 psia, and Maximum pressure of 695.7 psia. This analysis concluded that, over the ranges of level and pressure and for the worst case conditions of maximum level and minimum pressure, the ECCS performance for the SIT's is acceptable.

In summary, due to changes in input assumptions for the calibration calculations for SIT narrow range levels, two (2) SITs were found to be approximately 1.0% above the Technical Specification allowable limit of 83.8%. The appropriate LCOs were entered and the SIT levels were brought into the limits and the LCOs were exited within fourteen minutes. A review was conducted of Control Room Technical Specification logs between November 7, 1995, when operators were provided with charts to correlate actual SIT levels with indicated values, and January 11, 1996, when Temporary Alteration 95-022 was installed and Technical Specification 3.0.3 was entered. This review revealed that the maximum amount the actual level exceeded the Technical Specification limit was less than 1.1 percent. An analysis performed by ABB/CE in support of Waterford 3's Technical Specification level change request, indicates that there is an additional margin of greater than 2.0 percent over the maximum SIT level reached during that time period. There were 51 occasions when the actual level, considering all uncertainties, exceeded the Technical Specification maximum limit. On 20 of those occasions, there was one tank with an actual level greater than the



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Technical Specification limit. On 31 occasions, two tanks exceeded the Technical Specification limit simultaneously. While Technical Specification limits were exceeded, the ABB/CE analysis limits were not, therefore Waterford 3 was not placed in an unanalyzed condition. The ECCS performance for the SIT's for both a small break LOCA and a large break LOCA would remain acceptable. The SIT's could have performed their safety function without compromising the health and safety of the public.

## SIMILAR EVENTS

There have been no similar events reported as LERs at Waterford 3.