



Entergy

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Charles M. Dugger

General Manager
Plant Operations
Waterford 3

W3F1-96-0167

A4.05

PR

September 23, 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-96-013-00 for Waterford Steam Electric Station Unit 3. This Licensee Event Report is submitted in accordance with Waterford 3 License Condition 2.F for violating License Condition 2.C.1, "Maximum Power Level."

Very truly yours,

C.M. Dugger
General Manager
Plant Operations

CMD/OPP/ssf
Attachment

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

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PDR ADOCK 05000382
S PDR

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)

Waterford Steam Electric Station Unit 3

DOCKET NUMBER (2)

05000 382

PAGE (3)

1 OF 6

TITLE (4)

Possible Operation in Excess of 100% License Power

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
08	22	96	96	013	00	09	23	96	N/A	05000
									N/A	05000

OPERATING MODE (9) 1

POWER LEVEL (10) 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)

20.2201(b)	20.2203(a)(2)(v)	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)	<input checked="" type="checkbox"/> 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	TELEPHONE NUMBER (Include Area Code)
T.J. Gaudet, Licensing Manager	(504) 739-6666

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

SUPPLEMENTAL REPORT EXPECTED (14)

<input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE).	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
			11	25	96

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

On 8/22/96, with the plant operating at an indication of 100% power, the Core Operating Limits Supervisory System (COLSS) Main Steam Secondary Calorimetric (MSBSCAL) power validity check alarm was intermittently received and, at times, locked in for several minutes. This alarm results from a difference between MSBSCAL and two out of three other power indications, Turbine First Stage Pressure (BTFSP), Feedwater Secondary Calorimetric (FWBSCAL) and Primary Calorimetric (BDELTA). MSBSCAL was the primary indication used by the operators to maintain reactor power at 100%. The current concern is that MSBSCAL may have been indicating less than actual thermal power by approximately 0.4%, meaning that Waterford 3 may have operated in excess of the 100% licensed power limit. Indications are that this condition developed gradually over time following the return to power after completion of Refuel 7 (Nov., 1995). The actual cause of the mismatch is still being investigated. The health and safety of the general public was not compromised.

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

REPORTABLE OCCURRENCE

On August 22, 1996 the COLSS MSBSCAL [EIS Identifier JC] power validity check alarm was intermittently received and locked in at times for several minutes. The cause of the alarm (EIS Identifier JA) was a difference between MSBSCAL and two out of three other power indications, BTFSP, FWBSCAL and BDELTA. Power was reduced by 14 Mwe and FWBSCAL was used for secondary calorimetric. Preliminary investigation indicated that MSBSCAL, which was the indication used by the operators to maintain reactor power at 100%, may have been indicating less than actual thermal power by approximately 0.4%. Indications are that the condition developed gradually over time. Trend data indicates a divergence between power indications since Refuel 7. Based upon the above, Waterford 3 may have operated in excess of the 100% licensed power limit, but not in excess of the Design Basis limit of 102% power. Waterford 3 is currently in Mode 1 at 100% power and is operating using the more conservative indication of reactor power, FWBSCAL. This report is conservatively being made per Waterford 3 License Condition 2.F for potentially violating License Condition 2.C.1, "Maximum Power Level." Continued investigation into this condition is ongoing.

INITIAL CONDITIONS

Based on reviews of plant data, the gradual divergence between power indications began just after returning to power, following Refuel 7 (Nov., 1995). The plant has been operating at 100% power throughout the period, except for during two forced outages in 1996.

EVENT DESCRIPTION

- March 1994 Turbine First Stage Pressure indicated possible feedwater venturi fouling of approximately 0.7%.
- May 1994 Contractor independently measured feedwater flow with an Ultrasonic Flow Meter (UFM).

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- August 1994 Contractor Analysis of the UFM data indicated a 0.6 to 0.7 percent difference between the feedwater flows measured by the venturi and the UFM. This indicated that the venturis are fouled.
- Feb 1995 Implemented the Secondary Calorimetric Power Measurement (MSBSCAL) using Steam Flow and gained approximately 8 MWe.
- Oct 1995 Cycle 7 Refuel outage. Plant Monitoring Computer (PMC) was replaced. Main Steam (MS) flow transmitters [EIS Identifier FIT] were rescaled.
- Nov 1995 Start of Cycle 8. The deviation between MSBSCAL and FWBSCAL corresponded to approximately 8 MWe. Primary calorimetric BDELT was removed from service. The new PMC alarm screen was declared "unusable" by Plant Operations due to the enormous volume of information displayed.
- Jan 1996 Calibrated the Turbine First Stage Pressure transmitter [EIS Identifier PIT], which is an input to BTFSP (Turbine First Stage Pressure Power). Following the calibration, BTFSP indicated 1.1% higher than MSBSCAL. With BDELT removed from service, a deviation of 0.85% power between BTFSP and MSBSCAL or a deviation of 1.25% power between FWBSCAL and MSBSCAL will give the "COLSS MSBSCAL VALIDITY CHECK" PMC alarm. It is indeterminate as to whether the alarm was received or acknowledged.
- March 1996 Performance Engineer observes gross electrical generation slightly higher than expected (approximately 2-3 MWe). Deviation between MSBSCAL and FWBSCAL is approximately 1%. The Performance Engineer initiates a condition report (CR-96-0312). It was thought that the steam flow transmitter on the #1 steam generator side had drifted within its normal or allowable tolerance as calculated by ABB uncertainty analysis.
- May 1996 When the plant was placed back on line following a plant trip, the Main Feed Pump Low Pressure Steam Supply throttle malfunctioned. Consequently, supply steam for the Main Feed Pump was switched to the High Pressure Steam throttle. Turbine First Stage Pressure dropped approximately 5 psi, and as a result, BTFSP also decreased approximately 0.5%. The deviation between BTFSP and MSBSCAL was then 0.6% below the alarm setpoint of 0.85% power.

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Aug 12, 1996 Gross electrical generation was higher than expected and could not be explained. The Performance Engineer initiated a Condition Report (CR-96-1239). Repairs made during the forced outage to the "A" Main Feed Pump Turbine restored First Stage Pressure.

Aug 21 1996 A revision to the PMC alarm screen was implemented which removed most of the clutter that had rendered the screen unusable. BDELT and the PMC alarm for "COLSS MSBSCAL VALIDITY" were returned to service. The alarm was cycling at a high rate. BDELT was calibrated in an attempt to resolve the alarm issue.

Aug 22, 1996 Plant Operations switched to FWBSCAL from MSBSCAL due to PMC alarm "COLSS MSBSCAL VALIDITY CHECK." Mismatch between MSBSCAL and FWBSCAL was approximately 1.5%. A Condition Report was initiated (CR-96-1299).

Aug 22, 1996 A multi-discipline task group, including the ABB CE site representative, was initiated to investigate the condition.

Aug 28, 1996 The power mismatch was conservatively reported to the NRC due to the potential for having exceeded Licensed Power.

Sep 10, 1996 A containment entry was made to check the calibration of the steam flow transmitter on the #1 Steam Generator side. It was determined that the instrument calibration had not drifted.

CAUSAL FACTORS

Investigations are ongoing to determine the root cause of the gradual upward trend of power and to determine why MSBSCAL did not reflect that gradual trend. No definitive conclusions have been reached at the time of this submittal.

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IMMEDIATE CORRECTIVE MEASURES

The plant shifted from using MSBSCAL as the measure of thermal power to the more conservative indication of Feedwater Secondary Calorimetric (FWBSCAL).

A Containment entry was made on September 10, 1996 to check the calibration of the suspect Main Steam flow transmitter on the #1 Steam Generator side. It was determined that the as found instrument calibration was satisfactory.

A thorough review was conducted on site of inputs and outputs to COLSS. No discrepancies were identified. Applicable COLSS input plant data has been submitted to ABB CE for independent review and testing in a duplicate of Waterford 3's COLSS. Data has also been supplied to another independent consultant for review and analysis.

ACTIONS TO PREVENT RECURRENCE

Investigations are still in progress to determine the root cause of the condition. Actions to prevent recurrence will be determined upon identification of the causes. A follow-up revision to this LER will be issued to update subsequent findings within the next 60 days.

SAFETY SIGNIFICANCE

The condition as described above did not significantly impact the nuclear safety aspects of the plant. The preliminary indications are that the plant may have operated for several months (since Refuel 7) at up to approximately 100.4% of licensed power. This is well with the 102% power value to which the plant is analyzed for. Therefore, Waterford 3 did not operate in an unanalyzed condition. There was no significant threat to the health and safety of the general public or to plant employees as a result of the condition.

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

SIMILAR EVENTS

There have been no similar past events reported by Waterford 3.