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Waterford 3

W3F1-96-0142
A4.05
PR

September 6, 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-96-010-00 for Waterford Steam Electric Station Unit 3. 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

cc: L.J. Callan (NRC Region IV), C.P. Patel (NRC-NRR), D.F. Packer, J.T. Wheelock (INPO Records Center), R.B. McGehee, N.S. Reynolds, NRC Resident Inspectors Office, Administrator (LRPD)

IE22

NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 04/30/98

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.

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
WATERFORD STEAM ELECTRIC STATION UNIT 3	05000 382	1 OF 5

TITLE (4)

COLSS NOT MONITORING AZTILT DUE TO CONSTANTS NOT BEING LOADED

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	07	96	96	-- 010 --	00	09	06	96	N/A	05000
									FACILITY NAME: N/A	DOCKET NUMBER: 05000

OPERATING MODE (9)	1
POWER LEVEL (10)	100

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

20.2201(b)	20.2203(a)(2)(v)	X 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	TELEPHONE NUMBER (Include Area Code)
TIM GAUDET, LICENSING MANAGER	(504) 739-6666

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 August 5, 1996, at 1800 hours, Waterford 3 achieved 20% reactor power following a forced maintenance outage. The Core Operating Limits Supervisory System (COLSS) was operable at that time. Pursuant to Technical Specification (TS) 4.2.3.2a, when operating above 20% reactor power with COLSS operable, Azimuthal Power Tilt (Aztilt) shall be continuously monitored with COLSS to ensure that the COLSS-calculated Aztilt limit remains within the Aztilt allowance value stored in the Core Protection Calculators. On August 7, 1996, at 1200 hours, a nuclear engineer discovered that the Plant Monitoring Computer (PMC) was rebooted during the outage and an Aztilt default value of 0.030 was loaded. This value is non-conservative with the current Aztilt limit of 0.0217 and prevents compliance with TS 4.2.3.2a. Upon discovery, the correct Aztilt limit was loaded into COLSS. Research revealed that core Aztilt did not exceed 0.0217 but the alarm limit would have been exceeded (0.0153). Procedure revisions will be initiated to ensure verification of COLSS constants prior to commencing reactor operation above 20% power and upon rebooting the PMC. The default Aztilt value will be revised to alert operators when the default database has not been updated. 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

REPORTABLE OCCURRENCE

Pursuant to Technical Specification (TS) 4.2.3.2a, when operating above 20 percent reactor power with the Core Operating Limits Supervisory System (COLSS) operable, Azimuthal Power Tilt (Aztilt) shall be continuously monitored with COLSS to ensure that the COLSS-calculated Aztilt limit remains within the Aztilt allowance value stored in the Core Protection Calculators (CPC's) (EIIS Identifier - JC). Contrary to that requirement, however, from approximately 1800 hours on August 5, 1996, to 1200 hours on August 7, 1996, COLSS could not continuously monitor Aztilt because a non-conservative Aztilt limit had been loaded into COLSS. Pursuant to 10CFR50.73(a)(2)(i)(B), this event is reportable as a condition prohibited by TS.

INITIAL CONDITIONS

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

EVENT DESCRIPTION

On July 16, 1996, Waterford 3 was shut down for a forced maintenance outage. During that outage, maintenance was performed on the Plant Monitoring Computer (PMC) (EIIS Identifier - ID). The PMC was rebooted following the maintenance, however, since COLSS is not required to be operable below 20 percent reactor power, the "Update COLSS Constants" function was not run resulting in the default constant values being loaded.

On August 5, 1996, at 1001 hours, COLSS was scheduled during plant startup. Due to procedural deficiencies, because the PMC was not rebooted at that time, COLSS constants were not verified. At approximately 1[illegible] hours on August 5, 1996, Waterford 3 achieved 20 percent reactor power. Because the default constant values were still loaded, COLSS was not able to continuously monitor Aztilt as required by TS 4.2.3.2a.

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
WATERFORD STEAM ELECTRIC STATION UNIT 3	05000 382	96	-- 010 --	00	3 OF 5

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

On August 7, 1996, while reviewing a computer database that tracked Core Power Operating Limits, a Reactor Engineer discovered that COLSS constants were set to the default values. In consequence, the COLSS Power Operating Limits (POL's) indicated low in the conservative direction and the COLSS-CPC Tilt Limit indicated high in the non-conservative direction.

The default values for Radial Peaking Factors in COLSS were conservative values (installed in the PMC database prior to cycle 8 startup) and resulted in the POL's for Departure for Nucleate Boiling (DNBR) and Local Power Density (LPD) being approximately 6 percent below (conservative direction) values previously observed at 100 percent reactor power prior to the plant shutdown on July 16, 1996.

The default values for Azimuthal Power Tilt (Aztilt) that are loaded each time the PMC is rebooted installs the value of 0.03 into COLSS as the constant for CPC Tilt Limit. This valve was nonconservative with the current CPC Aztilt Limit of 0.0217. Research of Aztilt values since reactor power exceeded 20% power revealed that core Aztilt did not exceed 0.0217, but the alarm limit for the CPC Tilt Exceeded annunciator of 0.0153 would have been exceeded. The highest Aztilt value recorded was 0.0185.

There were no manual or automatic safety systems actuations as a result of this event. There were no safety systems nor components with multiple functions rendered inoperable as a result of this event.

CAUSAL FACTORS

The root cause for this event is a procedure deficiency in that when the PMC is rebooted less than 20% reactor power (COLSS not required to be in operation), there is no direction to verify COLSS constants. There is also no procedure guidance to alert the operators to verify that the addressable constant for COLSS-CPC Aztilt limit has been updated prior to exceeding 20% reactor power.

CORRECTIVE ACTIONS

- Upon the discovery of this condition the operators updated the COLSS constants to be consistent with plant conditions.
- OP-010-001, "General Plant Operations," Section 8.5 will be changed to include steps to ensure verification of COLSS constants prior to going above 20% reactor power.
- Guidance will be added to NE-007-013, "Plant Monitoring Computer Failover and Reboot Procedure,' to verify constants are updated each time the PMC is rebooted.
- A software program is being developed that will automatically update the COLSS constants each time the PMC is rebooted.
- The default value for the COLSS-CPC Tilt Limit will be changed from 0.03 to 0.00. If the constants are not updated when COLSS is scheduled, an annunciator will alert the control room staff of the problem.

In the interim, an entry will be made on the shift turnover sheet for the control room staff to ensure COLSS constants have been updated prior to exceeding 20% reactor power. Also, counseling has been given to RE&P personnel to ensure the COLSS constants are updated each time the PMC is rebooted.

SAFETY SIGNIFICANCE

The Waterford 3 Plant Monitoring Computer (EIIS Identifier - ID) is a centralized computer system which integrates balance of plant monitoring with nuclear applications for normal plant operation and emergency conditions. COLSS is the PMC program that monitors Aztilt by utilizing inputs from the Incore Detector System (EIIS Identifier - IG). Limitations on Aztilt are provided to ensure that design safety margins are maintained. The Core Protection Calculator (EIIS Identifier - JC) utilizes a fixed value of Aztilt that can be changed via an addressable constant. COLSS generates an alarm to alert the operators when actual Aztilt is greater than the fixed CPC value (i.e., non-conservative). Since there is no direct communication between COLSS and the CPC system, an

addressable constant is used to enable COLSS to know the value of the CPC Aztilt limit.

Between August 5, 1996, and August 7, 1996, the COLSS addressable constant for CPC Tilt Limit (0.03) was greater than the actual CPC Tilt limit (0.0217). During this time period the highest core Aztilt recorded was 0.0185. This did not exceed the Aztilt limit, but it did exceed the alarm setpoint for the CPC Tilt Exceeded annunciator (0.0153). This event did not prevent the fulfillment of the safety function of a safety system needed to mitigate the consequences of an accident, remove residual heat, shutdown the reactor and maintain it in a safe shutdown condition, or control the release of radioactive material. This event did not compromise the health and safety of the public.

SIMILAR EVENTS

LER-92-001-01:
On January 22, 1992, while operating at 100 percent reactor power the control room staff discovered that the COLSS Aztilt limit was set higher than the CPC Aztilt allowance. The cause was determined to be a combination of inadequate administrative controls in ensuring that changes in the CPC Aztilt allowance initiated a corresponding change in the COLSS Aztilt limit. Also noted as a cause was operator inadequate attention to detail.