



Florida Power

CORPORATION
Crystal River Unit 3
Docket No. 95-302

May 17, 1995
3F0595-06

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

Subject: Licensee Event Report (LER) 95-006-00

Dear Sir:

Enclosed is Licensee Event Report (LER) 95-006-00 which is submitted in accordance with 10 CFR 50.73.

Sincerely,

G. L. Boldt
Vice President
Nuclear Production

GLB/JAF:ff

Attachment

xc: Regional Administrator, Region II
Project Manager, NRR
Senior Resident Inspector

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EXPIRES 5/31/96

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HOURS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (MNRB 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) CRYSTAL RIVER UNIT 3 (CR-3)										DOCKET NUMBER (2) 0 5 0 0 0 3 0 2					PAGE (3) 1 OF 0 6									
TITLE (4) General Knowledge Deficiency Causes Level Instrumentation To Be Subjected To Low Temperatures Resulting in Challenge To Design Basis																								
EVENT DATE (5)			LER NUMBER (8)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (6)														
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES N/A				DOCKET NUMBER(S) 0 5 0 0 0											
0	4	1	7	9	5	9	5	0	0	6	0	0	0	5	1	7	9	5	N/A	0	5	0	0	0
OPERATING MODE (9)		1		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (CHECK ONE OR MORE OF THE FOLLOWING) (11)																				
POWER LEVEL (10)		1 0 0		20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)								
				20.405(a)(1)(i)				50.36(c)(1)				50.73(a)(2)(v)				73.71(c)								
				20.405(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(vii)				X OTHER (Specify in Abstract below and in Text, NRC Form 366A)								
				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)												
LICENSEE CONTACT FOR THIS LER (12)																								
NAME J. A. Frijout, Nuclear Regulatory Specialist										TELEPHONE NUMBER AREA CODE 9 0 4 5 6 3 - 4 7 5 4														
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE IN THIS REPORT (13)																								
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC														
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 fifteen single-space typewritten lines) (16)																								

On April 17, 1995, Florida Power Corporation's (FPC) Crystal River Unit 3 (CR-3) was in MODE ONE (POWER OPERATION), operating at 100% reactor power and generating 880 megawatts. FPC determined that CR-3 may have operated outside its design basis in that the Borated Water Storage Tank level instrumentation may have been subjected to temperatures less than the minimum considered in level measurement error calculations. FPC determined that the entrance door to the BST room was left open, and the temperature, at times, was less than 40 degrees Fahrenheit (deg F). A 1-Hour Non-Emergency Report was subsequently made to the Nuclear Regulatory Commission (NRC) under 10 CFR 50.72(b)(1)(ii)(B). Subsequently, an evaluation determined the effects of this temperature would not have adversely affected the instrumentation. Although this event resulted in operating outside the assumptions of the design basis calculation, it did not constitute operation outside the design basis. Therefore, this event is being reported as a voluntary Licensee Event Report. The cause of this event was a knowledge deficiency in that FPC personnel were not aware of the requirement to keep the BST room door closed. Corrective actions include a re-evaluation of the environmental zone temperatures affecting the BWST level instrumentation and posting of warning signs.

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TEXT CONTINUATION

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TEXT (If more space is required, Use additional NRC Form 386A's (17))

EVENT DESCRIPTION

On April 17, 1995, Florida Power Corporation's (FPC) Crystal River Unit 3 (CR-3) was in MODE ONE (POWER OPERATION), operating at 100% reactor power and generating 880 megawatts. At 1601, FPC Engineering personnel determined that CR-3 may have operated outside its design basis in that certain tank level instrumentation may have been subjected to ambient temperatures less than the minimum temperature considered in level measurement error calculations.

FPC Engineering personnel determined that during a period between January 31, 1995 and February 17, 1995, the steel entrance door to the BST room was left open (see Figure 1). The BST tank room contains two currently unused tanks (BST-1 and BST-2), and various tank level instrumentation components, including those of the Borated Water Storage Tank [BP,TK] (BWST). The 420,000 gallon BWST is adjacent to the BST tank room.

The BWST level instrumentation comprises Regulatory Guide 1.97 instrumentation and the Improved Technical Specifications (ITS) Table 3.3.17-1, Post Accident Monitoring Instrumentation, requires two operable channels of BWST level instrumentation. The BWST level instrumentation must be error corrected, since the BWST level comprises an input to several safety related functions, including post accident operator dose calculations, BWST vortex calculations and Low Pressure Injection [BP] (LPI) pump Net Positive Suction Head (NPSH). FPC Analysis/Calculation I91-0012 Revision 0, BWST Level Accuracy, provides the error correction and was developed using a temperature range of 40 deg F through 110 deg F.

A check of ambient temperature recorded by the Replacement Emergency Dose Assessment System (REDAS) revealed that during the period in question (January 31, 1995 through February 17, 1995) the ambient outdoor temperature, at times, was less than 40 degrees Fahrenheit (deg F).

Based on the fact that, at times, the recorded ambient outdoor temperature was below the temperature range used in the error calculation, and on conservative engineering judgement, on April 17, 1995, FPC determined that this event constituted operation outside the design basis and at 1650, a 1-Hour Non-Emergency Report was made to the Nuclear Regulatory Commission (NRC) Operations Center under the requirements of 10 CFR 50.72(b)(1)(ii)(B) and was assigned the NRC Event Number 28699.

Subsequently, an engineering analysis based of FPC Analysis/Calculation I91-0012 Revision 0 determined that the temperature effects observed had no meaningful impact on BWST level accuracy. Although this event resulted in operation outside the assumptions of the design basis calculation, it did not constitute operation outside the design basis. Therefore, this event is being reported as a voluntary Licensee Event Report (LER).

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TEXT (If more space is required, Use additional NRC Form 366A's (17))

EVENT EVALUATION

BWST inventory is monitored by redundant level instrumentation with a span of 0 to 50 feet. During a design basis Loss of Coolant Accident (LOCA) the Reactor Building Spray [BE](RBS), LPI, and high pressure injection [BQ](HPI) systems are automatically aligned to obtain suction from the BWST. As inventory is lost through the break it accumulates in the Reactor Building [NH](RB) Sump. The operator is required to switch LPI and HPI pump suction to the RB sump from the BWST when the BWST reaches a minimum specified setpoint. The BWST level is a Type A variable because it is the primary indication used by the operator to determine when to initiate the switch-over to the RB sump. This operator action is necessary to satisfy the long term core cooling requirements specified in 10 CFR 50.46.

There are no safety concerns with the lower temperature experienced while the door was open with respect to the BWST contents. There are heaters in the BWST which are energized when the temperature of the BWST contents is below 65 deg F. The heaters would have maintained the BWST contents well above the lower limit of 40 deg F, based on engineering judgement. Instrument lines would have been maintained above freezing based on heat conduction and radiant heat from the BWST contents for the short times that the temperature was below 32 deg F.

The lowest outside air temperature recorded by REDAS during the period the door was open was 26.49 deg F. A conservative assumption was made that the level instrumentation experienced temperatures down to 25 deg F. Vendor documentation indicates that the level transmitters lower temperature limit for nuclear use is 40 deg F. At lower temperatures, the time constant for instrument response increases. One time constant is defined as the time required for a device to change 66% of its span in response to an instantaneous step change equal to 100% of its span. The difference in time constants for this tank (four time constants equals .25 seconds at 70 deg F and 2.12 seconds at 23 deg F) is considered inconsequential, since the maximum BWST level rate of change would not challenge the time constant at 23 deg F.

The principal consideration regarding the effect of reduced temperature would be the decrease in instrument string accuracy during the time that the temperature was less than 40 deg F. FPC Analysis/Calculation I91-0012 Revision 0, BWST Level Accuracy, determined the loop error to be +/- .65 feet, which was rounded off in the Results/Conclusions section to the nearest .1 foot yielding a final result of +/- .7 feet. An engineering analysis of the reduced temperature effects based on Analysis/Calculation I91-0012 Revision 0 resulted in the calculated loop error increasing from +/- .65 to +/- .7 feet. Thus, there was no overall impact with respect to the existing Analysis/Calculation. Therefore, there was no impact to nuclear safety, and this event did not compromise the health and safety of the general public.

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TEXT (If more space is required, Use additional NRC Form 366A's (17))

CAUSE

The cause of this event was a general knowledge deficiency in that FPC personnel were not aware of the requirement to keep the BST room door closed to ensure that the temperature would be maintained within the error calculation limits.

IMMEDIATE CORRECTIVE ACTIONS

The entrance door to the BST room was verified to be closed and a Problem Report was generated.

ADDITIONAL CORRECTIVE ACTIONS

A re-evaluation of the environmental zone temperatures affecting the BWST level instrumentation will be conducted.

Signs will be posted on the entrance door to the BST room to remind personnel that the door must be closed when exiting the area.

ACTIONS TO PREVENT RECURRENCE

The results determined in the re-evaluation of the environmental zone temperatures will be included in Analysis/Calculation I91-0012 for BWST accuracy.

PREVIOUS SIMILAR EVENTS

There have been two previous reportable events involving failure to assure closure of a door as required. LER 90-07-00 involved removal of a habitability envelope (HE) door, and LER 94-010-00 involved blocking open a HE door.

ATTACHMENT

Attachment 1 Abbreviations and Acronyms

Figure 1 Plan View of BWST Area

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ATTACHMENT 1

Abbreviations and Acronyms

FPC	Florida Power Corporation
CR-3	Crystal River Unit 3
MODE ONE	POWER OPERATION
BWST	Borated Water Storage tank
deg F.	Degrees Fahrenheit
NRC	Nuclear Regulatory Commission
BST	BST Tank Room
REDAS	Replacement Dose Assessment System
ITS	Improved Technical Specifications
LPI	Low Pressure Injection
NPSH	Net Positive Suction Head
LOCA	Loss of Coolant Accident
RBS	Reactor Building Spray
HPI	High Pressure Injection

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FIGURE 1

BWST AREA

