Progress Energy

Crystal River Nuclear Plant
Docket No. 50-302
Operating License No. DPR-72

Ref: 10 CFR 50.73

December 17, 2009
3F1209-05

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Subject: LICENSEE EVENT REPORT 50-302/2009-004-01

Reference: Crystal River Unit 3 (CR-3) to NRC letter, dated November 18, 2009, "LICENSEE EVENT REPORT 50-302/2009-004-00"

Dear Sir:

Florida Power Corporation, currently doing business as Progress Energy Florida, Inc., hereby submits Revision 1 to Licensee Event Report (LER) 50-302/2009-004-00 (Reference). The LER discusses three (3) Main Steam Safety Valve lift setpoints being found outside their maximum allowable tolerance for a period longer than allowed by the Crystal River Unit 3 (CR-3) Improved Technical Specifications. This revision incorporates the results of the completed cause evaluation for this condition. This report is being submitted pursuant to 10CFR50.73(a)(2)(i)(B).

No new regulatory commitments are made in this letter.

If you have any questions regarding this submittal, please contact Mr. Dan Westcott, Superintendent, Licensing and Regulatory Programs, at (352) 563-4796.

Sincerely,

J. W. Holt

James W. Holt
Plant General Manager
Crystal River Nuclear Plant

JWH/dwh

Enclosure

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

Progress Energy Florida, Inc.
Crystal River Nuclear Plant
15760 W. Power Line Street
Crystal River, FL 34428

IE22
NRR

NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2010

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

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

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
CRYSTAL RIVER UNIT 3	05000302	1 of 6

4. TITLE
Main Steam Safety Valve Lift Setpoints Outside Required Tolerance Longer Than Allowed By Technical Specifications

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
09	22	2009	2009	- 004 -	01	12	17	2009	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE
1

10. POWER LEVEL
100%

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☒ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Dennis W. Herrin, Lead Engineer (Licensing and Regulatory Programs)	352-563-4633

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
X	SB	RV	D243	Y					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

On September 22, 2009, Progress Energy Florida, Inc., (PEF) Crystal River Unit 3 (CR-3) was in MODE 1 (POWER OPERATION) at approximately 100% RATED THERMAL POWER. While performing surveillance procedure SP-650, "ASME Code Safety Valves Test," on the 'A' Once Through Steam Generator, the lift setpoint for Main Steam Safety Valve (MSSV) MSV-34 was found above its maximum allowable tolerance. Subsequently, three of ten tested MSSVs were found to have lift setpoints above/below their maximum allowable tolerance. Improved Technical Specification (ITS) 3.7.1 states that the MSSVs shall be operable as specified in Table 3.7.1-1 in MODES 1, 2 and 3. To be operable, the MSSV lift setpoints must be within the maximum allowable tolerance of ± 3%. The existence of similar discrepancies in multiple relief valves is an indication that the discrepancies may have developed over a period of time. Therefore, PEF concludes that multiple MSSVs were inoperable during plant operation for a period longer than allowed by ITS and the condition is reportable under 10CFR50.73(a)(2)(i)(B). This condition does not represent a reduction in the public health and safety. The selected cause is possible failure to provide critical information to the vendor for valve rebuild. The three MSSVs were adjusted and retested satisfactorily. Similar occurrences were reported to the NRC in Licensee Event Reports 50-302/2001-002-00 and 50-302/2003-002-00.

EVENT DESCRIPTION

On September 22, 2009, Progress Energy Florida, Inc., (PEF) Crystal River Unit 3 (CR-3) was in MODE 1 (POWER OPERATION) at approximately 100% RATED THERMAL POWER. While performing surveillance procedure SP-650, "ASME Code Safety Valves Test," on the 'A' Once-Through Steam Generator (OTSG) [SB, SG], the Main Steam Safety Valve (MSSV) MSV-34 [SB, RV] lift setpoint was found above its maximum allowable tolerance. The maximum allowable tolerance specified in Improved Technical Specification (ITS) Table 3.7.1-1 is ± 3% of the lift setpoint. MSV-34 lifted at +4.3% of its lift setpoint. The Required Actions associated with ITS 3.7.1, Condition A, became applicable.

There are two OTSGs at CR-3. Each OTSG has two main steam lines. Each main steam line has four MSSVs with staggered relief pressures of 1050 pounds per square inch gauge (psig), 1070 psig, 1090 psig and 1100 psig. The MSSVs are required to be tested for relief setpoint accuracy in accordance with the CR-3 Inservice Testing Pump and Valve Program. This program requires that each MSSV be tested once every five years. Six MSSVs were scheduled to be tested prior to the start of Refueling Outage 16 (R16) on September 26, 2009.

Including MSV-34, three of the six MSSVs scheduled to be tested were found with lift setpoints outside of their maximum allowable tolerance. SP-650 states that for any valve tested to satisfy American Society of Mechanical Engineers (ASME) Operations and Maintenance (OM) Code requirements, whose setpoint is outside the "as-found" maximum allowable tolerance (± 3% of the lift setpoint), two additional valves from its group shall be tested. Since two of the three valves found with lift setpoints outside of their maximum allowable tolerance were from the same group, only two additional valves were left in that group to be tested. The third valve found with its lift setpoint outside of its maximum allowable tolerance resulted in two additional valves from its group being tested. A total of four additional valves were tested. None of these valves were found with lift setpoints outside of their maximum allowable tolerance.

Tag	Main Steam Line	Design Pressure	As-Found Pressure	As-Found %
MSV-34 (Orig.)	A1	1050	1094.7	+4.3
MSV-36 (Orig.)	B2	1050	1001.4	-4.6
MSV-38 (Orig.)	A1	1070	Acceptable	N/A
MSV-40 (Orig.)	A1	1090	Acceptable	N/A
MSV-43 (Orig.)	A1	1090	1033.6	-5.2
MSV-46 (Orig.)	A2	1100	Acceptable	N/A
MSV-33 (Add)	A2	1050	Acceptable	N/A
MSV-35 (Add)	B1	1050	Acceptable	N/A
MSV-42 (Add)	A2	1090	Acceptable	N/A
MSV-44 (Add)	B1	1090	Acceptable	N/A

ITS 3.7.1 states that the MSSVs shall be operable as specified in Table 3.7.1-1 in MODES 1, 2 and 3. With one or more required MSSVs inoperable, THERMAL POWER shall be reduced to less than the reduced power limit of Table 3.7.1-1 within 4 hours (Required Action A.1) and the nuclear overpower trip setpoint shall be reduced in accordance with Table 3.7.1-1 within 12

hours (Required Action A.2). Each MSSV found with its lift setpoint outside of the maximum allowable tolerance range was restored to an operable status within 4 hours. Therefore, ITS 3.7.1, Required Actions A.1 and A.2, were not performed.

In accordance with NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73," Revision 2, Section 3.2.2, the existence of similar discrepancies in multiple relief valves is an indication that the discrepancies may well have developed over a period of time. Based on this guidance, PEF concludes that multiple MSSVs were inoperable during plant operation for a period longer than allowed by ITS. This condition is reportable under 10CFR50.73(a)(2)(i)(B).

SAFETY CONSEQUENCES

The MSSVs provide overpressure protection for the Main Steam System piping and the OTSGs. The design pressure for the Main Steam System is 1050 psig. Enhanced Design Basis Document Tab 6/10, "Main Steam System," states the total MSSV capacity to be such that steam pressure will not exceed 110% of system design pressure (1155 psig) for the limiting overpressurization event. The limiting event that challenges the MSSV capacity is the Turbine Generator trip that occurs at 112% rated thermal power. Only one of the tested MSSVs (MSV-34) was found with its lift setpoint slightly above its maximum allowable tolerance by +1.3%. As such, the MSSVs were considered to be fully capable of providing OTSG overpressure protection.

The primary concern associated with MSSV lift setpoints being found below their maximum allowable tolerance is the risk of over cooling the Reactor Coolant System (RCS) [RC]. Two of the tested MSSVs (MSV-36 and MSV-43) were found with their lift setpoint slightly below the maximum allowable tolerance (-1.6% and -2.2%, respectively). The SP-650 testing verified that the MSSVs were capable of closing at pressures that would not challenge the plant's ability to maintain acceptable post-accident RCS pressures and temperatures.

Based on the above discussion, PEF concludes that the inoperable condition of MSV-34, MSV-36 and MSV-43 did not represent a reduction in the public health and safety. This event does not meet the definition of a Safety System Functional Failure as defined in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline."

CAUSE

A conclusive "root" or "common" technical cause could not be identified following the investigation by CR-3 and review of the MSSV refurbishment and calibration reports. A "selected" cause (a causal factor that most likely describes the root cause of the event) was therefore identified.

The selected cause is vendor repair/refurbishment not meeting expectations possibly due to failure to provide critical information to the vendor. The basis for the selected cause is that the three MSSVs that failed were recently rebuilt by the vendor (one in 2005 and two in 2007) and they subsequently failed in a short period of time thereafter (2009) in the first test following the work.

Progress Energy did not perform any vendor surveillances of these valves while they were at Wyle Laboratory (testing) or at Dresser Industries (refurbishment). The current Progress Energy Approved Supplier List process does not require any on site vendor surveillance for Wyle or Dresser. All failures since 2005 have been with valves that were recently rebuilt. Three of the four occurred two years following a rebuild and the fourth occurred four years after a rebuild. As part of on-going efforts to better control vendor quality, failures of vendor valves that were recently rebuilt indicates potential problems with the rebuild/testing activities that warrants action to ensure refurbishment and testing requirements are clearly established for the vendors and that physical activities are performed in a manner to ensure future reliability.

CORRECTIVE ACTIONS

1. MSV-34, MSV-36 and MSV-43 (Dresser, Model 3707RA) were restored to an operable status within 4 hours of identifying the associated lift setpoints being outside the maximum allowable tolerance.

2. MSV-34, MSV-36 and MSV-43 were subsequently removed from service, refurbished and retested by the vendor and re-installed in the plant (Work Orders 1625933, 1625792 and 1500994, respectively). A probable cause for MSV-34 lifting high is mechanical binding or sticking, so the valve disc was replaced as a part of the refurbishment.

3. The compression screw lock nut will be inspected and tightened if needed on all 16 installed MSSVs to preclude the possibility of it being a cause of setpoint drift (Work Request 408267). The lock nut for MSV-43 had been found loose at the vendor facility, but it was unable to be determined if it was loose during operation or loosened for shipping/testing purposes.

4. Additional corrective actions are being considered and will be tracked in the CR-3 Corrective Action Program under Nuclear Condition Report 356521.

PREVIOUS SIMILAR EVENTS

Previous occurrences of MSSV setpoints being found outside their required tolerance have been reported to the NRC in Licensee Event Reports 50-302/2001-002-00 and LER 50-302/2003-002-00.

ATTACHMENTS

Attachment 1 - Abbreviations, Definitions, and Acronyms

Attachment 2 - List of Commitments

ATTACHMENT 1

ABBREVIATIONS, DEFINITIONS AND ACRONYMS

ASME	American Society of Mechanical Engineers
CFR	Code of Federal Regulations
CR-3	Crystal River Unit 3
ITS	Improved Technical Specifications
MSV	Main Steam Valve
MSSV	Main Steam Safety Valve
NEI	Nuclear Energy Institute
NUREG	NRC Nuclear Regulation
O&M Code	Operations & Maintenance Code
OTSG	Once Through Steam Generator
PEF	Progress Energy Florida, Inc.
psig	pounds per square inch gauge
R16	Refueling Outage 16
RCS	Reactor Coolant System
SP	Surveillance Procedure

NOTES: Improved Technical Specification Defined terms appear capitalized in LER text {e.g., MODE 1}.

Defined terms/acronyms/abbreviations appear in parenthesis when first used {e.g., Reactor Building (RB)}.

EIIS codes appear in square brackets {e.g., reactor building penetration [NH, PEN]}

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Attachment 2

LIST OF COMMITMENTS

The following table identifies those actions committed by PEF in this document. Any other actions discussed in the submittal represent intended or planned actions by PEF. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Superintendent, Licensing and Regulatory Programs of any questions regarding this document or any associated regulatory commitments.

COMMITMENT	DUE DATE
No new regulatory commitments are contained in this submittal.	N/A