



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

Ref: 10 CFR 50.73

November 20, 2003  
3F1103-02

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

Subject: LICENSEE EVENT REPORT 50-302/03-002-00

Dear Sir:

Please find enclosed Licensee Event Report (LER) 50-302/03-002-00. The LER discusses six Main Steam Safety Valve set points found to be below their required tolerance for a period longer than allowed by the Crystal River Unit 3 Improved Technical Specifications. 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. Sid Powell, Supervisor, Licensing and Regulatory Programs at (352) 563-4883.

Sincerely,

James H. Terry  
Manager, Engineering  
Crystal River Nuclear Plant

JHT/dwh

Enclosure

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

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

IE22

**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 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@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 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.

1. FACILITY NAME

CRYSTAL RIVER UNIT 3

2. DOCKET NUMBER

05000 302

3. PAGE

1 OF 6

4. TITLE

Main Steam Safety Valve Setpoints Below Required Tolerance Longer Than Allowed By Technical Specifications

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
09	29	2003	03	- 002 - 00		11	20	2003		05000
									FACILITY NAME	DOCKET NUMBER
										05000
									FACILITY NAME	DOCKET NUMBER
										05000

  

9. OPERATING MODE	10. POWER LEVEL	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)																					
1	80%	20.2201(b)	20.2201(d)	20.2203(a)(1)	20.2203(a)(2)(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)(ii)(A)	50.73(a)(2)(iii)(A)	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)(A)	50.73(a)(2)(viii)(A)	50.73(a)(2)(viii)(B)	

12. LICENSEE CONTACT FOR THIS LER

NAME: Dennis W. Herrin, Lead Engineer  
TELEPHONE NUMBER (include Area Code): (352) 563-4633

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	SB	RV	D243	Y					

14. SUPPLEMENTAL REPORT EXPECTED

15. EXPECTED SUBMISSION DATE

YES (If yes, complete EXPECTED SUBMISSION DATE). X NO MONTH DAY YEAR

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

At 19:58, on September 29, 2003, Progress Energy Florida, Inc., Crystal River Unit 3 was in MODE 1 (POWER OPERATION) at approximately 80 percent RATED THERMAL POWER. While performing surveillance procedure SP-650, "ASME Code Safety Valves Test," on the 'B' Once Through Steam Generator, the setpoint for main steam safety valve (MSSV) MSV-41 was found below its required tolerance. Subsequently, six of twelve tested MSSVs were found to have setpoints below their required 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. In order to be considered operable, the MSSV setpoints must be within +/- 3 percent of the nominal tolerance. 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 cause for this condition was previous test methodology. The six MSSVs were adjusted and retested satisfactorily. A similar occurrence was previously reported to the NRC in Licensee Event Report 50-302/01-002-00.

**LICENSEE EVENT REPORT (LER)**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
CRYSTAL RIVER UNIT 3	05000302	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 6
		03	-- 002 --	00	

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

**EVENT DESCRIPTION**

At 19:58, on September 29, 2003, Progress Energy Florida, Inc., (PEF) Crystal River Unit 3 (CR-3) was in MODE 1 (POWER OPERATION) at approximately 80 percent RATED THERMAL POWER. While performing surveillance procedure SP-650, "ASME Code Safety Valves Test," on the 'B' Once Through Steam Generator (OTSG) [SB, SG], the setpoint for main steam safety valve (MSSV) MSV-41 [SB, RV] was found below its required tolerance. The acceptance criteria specified in Improved Technical Specification (ITS) Table 3.7.1-1 is +/- 3 percent of the nominal setpoint. MSV-41 lifted at -7.19 percent of the nominal setpoint. The MSSV was declared inoperable and 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 13 (R13) on October 4, 2003.

Three of the six MSSVs scheduled to be tested were found with setpoints below their required tolerance. Due to an extent of condition concern, the remaining six MSSVs, not planned for refurbishment, were tested. Of the twelve MSSVs tested, six had as-found setpoints below their nominal tolerance.

Tag	Main Steam Line	Design Pressure	As-Found Pressure	As-Found %
MSV-35	B1	1050	997.5	-5.00
MSV-36	B2	1050	1015	-3.33
MSV-41	B2	1070	993.07	-7.19
MSV-44	B1	1090	1055	-3.21
MSV-45	B2	1090	1053	-3.39
MSV-46	A2	1100	1062	-3.45

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 (Action A.1) and the nuclear overpower trip setpoint shall be reduced in accordance with Table 3.7.1-1 within 12 hours (Action A.2). Once declared inoperable, each MSSV was restored to an operable status within 4 hours.

The existence of similar discrepancies in multiple relief valves is an indication that the discrepancies may well 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).

**LICENSEE EVENT REPORT (LER)**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
CRYSTAL RIVER UNIT 3	05000302	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 OF 6
		03	-- 002 --	00	

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

**SAFETY CONSEQUENCES**

The MSSVs provide overpressure protection for the main steam 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 percent 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 percent rated thermal power. Since none of the tested MSSVs were found with setpoints above their nominal tolerance, the MSSVs were fully capable of providing OTSG overpressure protection.

The primary concern associated with MSSV setpoints being found below their nominal tolerance is the risk of over cooling the Reactor Coolant System (RCS). 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 inoperability of MSV-35, MSV-36, MSV-41, MSV-44, MSV-45 and MSV-46 did not represent a reduction in the public health and safety. This event does not meet the definition of a Safety System Functional Failure.

**CAUSE**

The cause for the tested MSSV as-found setpoints being found below their nominal tolerance is test methodology used prior to R13. There were two deficiencies in test methodology. The first deficiency was use of higher than expected main steam operating pressures (925 psig to 940 psig versus 910 psig) to set the valves. The test gauge (Ashcroft/Dresser Type 1082, 0 to 1500 psig) used to measure main steam line pressure was not temperature compensated. Field measurements of the OTSG A1 main steam line vent location measured 400 degrees Fahrenheit at the pipe cap where the gauge was connected. This condition resulted in inaccurate pressure readings. Prior to R13, the decision was made to install the pressure gauges between two Emergency Feedwater Initiation and Control pressure transmitters, where the ambient temperature would not significantly affect the accuracy of the test gauge.

The second deficiency was the practice of not requiring adjustment of the MSSVs if their as-found setpoint was within the +/- 3 percent tolerance (e.g., could be as-left at -2.99 percent), unless the valve was rebuilt.

A contributing factor was an improvement made to the actual test implementation. In previous SP-650 tests, the Dresser Industries 1566 Hydroset test equipment was used to establish MSSV setpoint pressure. An industry review concluded that the Trevitest method by Furmanite was more accurate and repeatable. The Trevitest equipment was used for SP-650 MSSV testing performed prior to the start of R13.

**LICENSEE EVENT REPORT (LER)**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
CRYSTAL RIVER UNIT 3	05000302	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 OF 6
		03	-- 002 --	00	

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

**CORRECTIVE ACTIONS**

MSV-35, MSV-36, MSV-41, MSV-44, MSV-45 and MSV-46 (Dresser, Model 3707 RA) were restored to an operable status within 4 hours of identifying the associated setpoints to be outside their required tolerance.

SP-650 was revised prior to R13 MSSV testing to require as-left setpoints for tested MSSVs to be set to within +/- 1 percent of their nominal tolerance. Engineering acceptance should be obtained and documented to leave a MSSV setpoint outside +/- 1 percent of the nominal tolerance, but within +/- 3 percent of the nominal tolerance.

Additional corrective actions are being considered and are being tracked in the CR-3 Corrective Action Program under Nuclear Condition Report 105988.

**PREVIOUS SIMILAR EVENTS**

No previous occurrences of MSSV setpoints being found below their required tolerance have been reported to the NRC. However, MSSV setpoints being found above their required tolerance were reported in Licensee Event Report 50-302/01-002-00, "Main Steam Safety Valve Setpoints Outside Required Tolerance Longer Than Allowed By Technical Specifications," dated November 19, 2001.

**ATTACHMENTS**

Attachment 1 - Abbreviations, Definitions, and Acronyms

Attachment 2 - List of Commitments

**LICENSEE EVENT REPORT (LER)**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
CRYSTAL RIVER UNIT 3	05000302	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	5 OF 6
		03	-- 002 --	00	

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

**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
- OTSG      Once Through Steam Generator
- PEF      Progress Energy Florida, Inc.
- psig      pounds per square inch gauge
- R13      Refueling Outage 13
- SP      Surveillance Procedure

**NOTES:** Improved Technical Specifications 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]).

**LICENSEE EVENT REPORT (LER)**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
CRYSTAL RIVER UNIT 3	05000302	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	6 OF 6
		03	-- 002 --	00	

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

ATTACHMENT 2

LIST OF COMMITMENTS

The following table identifies those actions committed to by Progress Energy Florida, Inc., (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 Supervisor, Licensing & Regulatory Programs of any questions regarding this document or any associated regulatory commitments.

RESPONSE SECTION	COMMITMENT	DUE DATE
	No regulatory commitments are being made in this submittal.	