Florida Power
A Progress Energy Company

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

July 9, 2001
3F0701-03

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

Subject: LICENSEE EVENT REPORT 50-302/01-001-00

Dear Sir:

Please find enclosed Licensee Event Report (LER) 50-302/01-001-00. The LER discusses an installation error that resulted in a containment isolation check valve being inoperable for a period longer than allowed by the Improved Technical Specifications (ITS). This report is being submitted pursuant to 10CFR50.73(a)(2)(i)(B).

If you have any questions regarding this submittal, please contact Mr. Sid Powell, Supervisor, Licensing and Regulatory Programs at (352) 563-4883.

Sincerely,

Daniel L. Roderick
Plant General Manager

DLR/dwh

Enclosure

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

IE22

NRC FORM 366 (1-2001) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

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

APPROVED BY OMB NO. 3150-0104 EXPIRES 6-30-2001

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.

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TITLE (4)
Installation Error Results In Containment Isolation Valve Inoperable Longer Than Allowed By Technical Specifications

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER 05000
05	13	2001	01	- 001	- 00	07	09	2001	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	1
POWER LEVEL (10)	85%

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

	20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)
	20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)
	20.2203(a)(1)		50.36(c)(1)(i)(A)		50.73(a)(2)(iv)(A)		73.71(a)(4)
	20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50.73(a)(2)(v)(A)		73.71(a)(5)
	20.2203(a)(2)(ii)		50.36(c)(2)		50.73(a)(2)(v)(B)		OTHER Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		
	20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)		
	20.2203(a)(2)(v)	X	50.73(a)(2)(i)(B)		50.73(a)(2)(vii)		
	20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(viii)(A)		
	20.2203(a)(3)(i)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(B)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Dennis W. Herrin, Project Engineer	(352) 795-6486, Extension 3299

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FA CTURER	REPORTABLE TO EPIX
D	SJ	V	C665	Y					

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 May 14, 2001, Florida Power Corporation's (FPC's) Crystal River Unit 3 (CR-3) was in MODE 1 (POWER OPERATION) at 85 percent RATED THERMAL POWER. While investigating a difference in main feedwater pump (MFP) discharge pressures, FPC personnel determined that feedwater check valve FWV-46 may not close as required to perform its containment isolation design function. At 1648, on May 14, 2001, FWV-46 was declared inoperable. The Actions of Improved Technical Specification (ITS) 3.6.3, Condition C, were entered. Upon disassembly, the as-found condition of FWV-46 showed that the disc had separated from the valve and wedged in the valve body outlet. FPC personnel concluded that FWV-46 became inoperable at 1525, on May 13, 2001, during an unplanned power reduction. FWV-46 was inoperable for approximately 25 hours and 23 minutes before entering the Actions of ITS 3.6.3, Condition C. This is a condition prohibited by ITS and 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 lack of procedural guidance to ensure proper installation of the check valve disc. FWV-46 has been repaired. Changes to Maintenance Procedure MP-120 have been initiated. Three previous similar LERs have been identified.

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

EVENT DESCRIPTION

On May 14, 2001, Florida Power Corporation's (FPC's) Crystal River Unit 3 (CR-3) was in MODE 1 (POWER OPERATION) at 85 percent RATED THERMAL POWER. While investigating a 200 pound per square inch gauge (psig) difference in the discharge pressure between Main Feedwater Pump MFP-2A [SJ, P] and MFP-2B, FPC personnel determined that a flow restriction downstream of MFP-2B was causing an increase discharge pressure. The flow restriction appeared to be associated with MFP-2B discharge check valve FWV-46 [SJ, V]. The flow restriction was postulated as being caused by a broken or out of position check valve disc hinge pin, foreign material in the valve, or the valve disc being stuck in a partially open position. Reasonable assurance could not be presented to assure FWV-46 would close as required to perform its containment isolation design function. At 1648, on May 14, 2001, FWV-46 was declared inoperable and the Actions of Improved Technical Specification (ITS) 3.6.3, Condition C, were entered. The Actions of ITS 3.6.3, Condition C, require that the affected containment penetration flow path be isolated by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange within 4 hours and that isolation of the affected containment penetration flow path be verified once per 31 days. Action C.1 of ITS 3.6.3, Condition C, could not be satisfied without creating an unacceptable plant transient. At 2048, on May 14, 2001, the Actions of ITS 3.6.3, Condition E were entered and preparations were initiated to shut down the plant. The Actions of ITS 3.6.3, Condition E, require the plant to be in MODE 3 within 6 hours and in MODE 5 within 36 hours.

At 2053, on May 14, 2001, Operations shift personnel received a revision to Final Safety Analysis Report (FSAR) Tables 5-4 and 5-9. These changes replaced the containment isolation function of FWV-46 with feedwater block valves FWV-29, FWV-32, and FWV-33. The Actions of ITS 3.6.3, Conditions C and E were no longer applicable and were exited.

At 0416, on May 18, 2001, CR-3 was taken off line to inspect and repair FWV-46. The as-found condition of FWV-46 showed that both check valve hinge pins and retaining pins were not in place, allowing the disc to separate from the valve and wedge in the valve body outlet. FWV-46 was determined to be inoperable because it could not have performed its containment isolation design function. FPC personnel concluded that the FWV-46 check valve disc came loose at 1525, on May 13, 2001, when MFP-2B was run back to support an unplanned power reduction. FWV-46 was inoperable for approximately 25 hours and 23 minutes, during which time the investigation was proceeding to determine the cause for the difference in MFP discharge pressures, before entering the Actions of ITS 3.6.3, Condition C. This is a condition prohibited by ITS and is reportable under 10CFR50.73(a)(2)(i)(B).

SAFETY CONSEQUENCES

Containment penetration 108 [NH, PEN] is the path through which main feedwater is supplied to the secondary side of Reactor Coolant System (RCS) [AB] Once Through Steam Generator (OTSG) 1B [AB, SG]. This penetration is categorized as Type III. Final Safety Analysis Report (FSAR) Section 5.3.2 defines a Type III penetration as: "Each line not directly connected to the

Reactor Coolant System (RCS) or not open to the reactor building [NH] atmosphere has at least one valve, either a check valve, normally closed manual valve, or a remotely operated valve. This valve is located external to the reactor building." Feedwater check valve FWV-46 is the valve external to the reactor building for containment penetration 108. FWV-46 is a safety-related, 18 inch, Crane Model 973A, 900 pound, tilting disc check valve.

FSAR Table 5-9, "Containment Isolation Valves [NH, ISV]," identifies FWV-46 as a containment isolation valve. FWV-46 is designed to close when feedwater flow is not being supplied to OTSG 1B. Based on the as-found condition, FWV-46 was not capable of performing its containment isolation design function (closing).

The FSAR Section 14 accident analysis does not take credit for the containment isolation capability of FWV-46 during the Main Steam Line Break or Feedwater Line Break accidents. Additionally, one of the two required containment isolation barriers (piping between the OTSG and containment) for penetration 108 remains intact during a Loss of Coolant Accident.

In the case of a Steam Generator Tube Rupture (SGTR) accident, all activity is presumed released directly to the environment via the escaping steam. If FWV-46 does not close, the RCS pressure could be high enough to force reactor coolant out of the ruptured tube, through the OTSG, and into the feedwater piping which is located in the Intermediate Building and Turbine Building. Feedwater System leakage upstream of FWV-46 could contribute to post-accident offsite dose consequences, but is bounded for the SGTR accident. Therefore, FPC concludes that the inoperability of FWV-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 this condition was lack of procedural guidance to ensure proper installation of the check valve disc. Maintenance Procedure MP-120, "Maintenance of Pressure Seal Gate, Globe, and Check Valves," was revised in 1997 in response to a failure of FWV-46. This revision included specific anti-rotation weld instructions to ensure check valve disc retaining pins do not back out of position once installed. However, those instructions did not capture all the written and verbal instructions provided to the work crew repairing FWV-46 in 1997.

The check valve disc is attached to the valve body by hinges on each side of the disc. A hinge pin is inserted into the disc hinge and valve body hinge on each side of the disc. A threaded retaining pin is inserted through the disc hinge and screwed into the hinge pin. Anti-rotation welds are placed on the disc hinge in close proximity to the retaining pin head to prevent rotation.

In 1999, the anti-rotation welds installed in 1997 were removed to complete a check valve inspection. New hinge and retaining pins were installed and the anti-rotation welds were replaced. The anti-rotation welds were installed using only the guidance contained in MP-120. Those welds did not have sufficient height to prevent the retaining pins from rotating out of position.

Prolonged clatter existed between the FWV-46 backstop and disc. This clatter imparted forces on the retaining pins that would cause the pins to rotate in the counter clockwise direction. The pin/weld configuration was not adequate to withstand the forces resulting from the backstop clatter. Over a period of time, the retaining pins unscrewed and came out, the hinge pins came out of the hinges and the disc became dislodged.

CORRECTIVE ACTIONS

FWV-46 was repaired and returned to service.

FWV-45 is the discharge check valve for MFP-2A and also performs a containment isolation function. No immediate internal inspection of FWV-45 is planned for the following reasons:

The piping configuration for FWV-45 differs from that for FWV-46. The piping configuration for FWV-46 is such that less than one pipe diameter exists between an upstream elbow and the check valve. However, there is approximately 60 feet of straight pipe upstream of FWV-45. This increased length of straight pipe results in fewer flow variations and reduced valve disc movement (clatter) due to flow oscillations.

No valve failures of FWV-45 have occurred since 1980.

On January 22, 1998, FWV-45 was opened and inspected. No deficiencies were noted.

Other safety-related tilting disc check valves requiring the same retainer pin anti-rotation welding were opened and inspected in late 1997. No problems with these valves were identified during those inspections. No inspections of these valves, beyond those inspections required by the Check Valve Reliability Program, are considered to be necessary.

Changes to Maintenance Procedure MP-120, "Maintenance of Pressure Seal Gate, Globe, and Check Valves," have been initiated to include additional instructions for ensuring check valve retaining pins do not back out of position once installed.

PREVIOUS SIMILAR EVENTS

Three previous similar LERs have been identified. LERs 50-302/80-017/03L-0 and LER 50-302/80-021/03L-0 documented a stuck disc for FWV-46 and FWV-45, respectively, due to a missing retainer pin. The cause in both cases was a deficiency occurring during the initial assembly by the manufacturer. The retainer pin assemblies were upgraded.

LER 50-302/97-030-00 documented a stuck disc for FWV-46 due to a missing hinge and retaining pin on one side of the check valve disc. The cause was cognitive personnel error in that an anti-rotation weld made in 1989 was not correctly placed to prevent one of the retaining pins from backing out of its position. Maintenance Procedure MP-120 was revised to contain specific anti-rotation weld instructions for assembly of the retaining pins.

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ATTACHMENTS

Attachment 1 - Abbreviations, Definitions, and Acronyms

Attachment 2 - List of Commitments

ATTACHMENT 1

ABBREVIATIONS, DEFINITIONS AND ACRONYMS

FSAR	Final Safety Analysis Report
FWV	Feedwater Valve
CFR	Code of Federal Regulations
CR-3	Crystal River Unit 3
FPC	Florida Power Corporation
ITS	Improved Technical Specifications
LER	Licensee Event Report
MFP	Main Feedwater Pump
MP	Maintenance Procedure
OTSG	Once Through Steam Generator
psig	pounds per square inch gauge
RCS	Reactor Coolant System
SGTR	Steam Generator Tube Rupture

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]}.

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ATTACHMENT 2

LIST OF COMMITMENTS

The following table identifies those actions committed to by Florida Power Corporation in this document. Any other actions discussed in the submittal represent intended or planned actions by Florida Power Corporation. 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.	