Progress Energy

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

Ref: 10 CFR 50.73

August 7, 2003
3F0803-02

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

Subject: LICENSEE EVENT REPORT 50-302/03-001-00

Dear Sir:

Please find enclosed Licensee Event Report (LER) 50-302/03-001-00. The LER discusses the loss of both Control Complex Chillers event that occurred on June 11, 2003, due to incorrectly set motor overload relays. This report is being submitted pursuant to 10CFR50.73(a)(2)(i)(B), 10CFR50.73(a)(2)(v)(D) and 10CFR50.73(a)(2)(vii).

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,

Jon A. Franke
Plant General Manager
Crystal River Nuclear Plant

JAF/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

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NRC FORM 366 (7-2001) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004

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.

LICENSEE EVENT REPORT (LER)

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

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4. TITLE
Incorrectly Set Motor Overload Relays Result In Loss Of Both Control Complex Chillers

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
										05000
06	11	2003	03	- 001	- 00	08	07	2003	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)		20.2203(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)	X	50.73(a)(2)(v)(D)		
	20.2203(a)(2)(v)	X	50.73(a)(2)(i)(B)	X	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)		

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Dennis W. Herrin, Lead Engineer	(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	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED			15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

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

On June 11, 2003, Progress Energy Florida, Inc.'s, Crystal River Unit 3 (CR-3) was in MODE 1 (POWER OPERATION) at 100 percent RATED THERMAL POWER. At 13:35, Control Complex Chiller, CHHE-1B, tripped while swapping Control Complex ventilation trains. At 14:09, CHHE-1A tripped as it was being started and heat load was being added. Improved Technical Specification (ITS) 3.0.3 was entered at this time for having both Control Complex Cooling System trains inoperable. The cause of this event was the incorrect calibration of the chiller motor overload relays for CHHE-1B in December 2002 and for CHHE-1A in February 2003. CHHE-1A was manually started and successfully loaded incrementally. At 16:18, ITS 3.0.3 was exited. The motor overload relays for CHHE-1A/1B have been recalibrated. Maintenance procedures will be generated or revised, as appropriate, to provide detailed instructions for calibration of the subject motor overload relays. This condition does not represent a reduction in the public safety. One previous similar occurrence was reported to the NRC by CR-3 in Licensee Event Report 50-302/97-043-00.

EVENT DESCRIPTION

On June 11, 2003, Progress Energy Florida, Inc.'s, (PEF's) Crystal River Unit 3 (CR-3) was in MODE 1 (POWER OPERATION) at 100 percent RATED THERMAL POWER (RTP). Control Complex Chiller, CHHE-1B [NA, CHU], was operating normally prior to a ventilation train swap for performance of Surveillance Procedure SP-353, "Control Room Emergency Ventilation System and RM-A5 Monthly Test." Train A of the Control Room Emergency Ventilation System (CREVS) [VI] was shutdown. Train B of CREVS was aligned in the emergency recirculation mode. At 13:35, CHHE-1B tripped while swapping Control Complex ventilation trains. Improved Technical Specification (ITS) 3.7.18, "Control Complex Cooling System," Condition A, was entered at this time for having one Control Complex Cooling System train inoperable. Actions were initiated to place adequate Control Complex Cooling in operation.

An immediate inspection of the CHHE-1B did not note any abnormalities with the equipment. CHHE-1B was reset at the control panel. At approximately 13:50, an attempt was made to restart CHHE-1B in automatic using Operating Procedure OP-409, "Plant Ventilation System." The CHHE-1B 30-minute anti-recycle timer [NA, TMR] started at this time. The CHHE-1B motor [NA, MO] did not start as required in the normal start sequence. CHHE-1B was secured. A subsequent pre-start inspection of CHHE-1B found the "B" phase motor overload relay [NA, 50] tripped. The overload relay was reset.

At approximately 14:04, CHHE-1A was started in automatic using OP-409. The CHHE-1A 30-minute anti-recycle timer started at this time. At 14:09, CHHE-1A tripped as heat load was added. ITS 3.0.3 was entered at this time for having both Control Complex Cooling System trains inoperable. A subsequent pre-start inspection of CHHE-1A found the "C" phase motor overload relay tripped. The overload relay was reset.

At approximately 14:20, the CHHE-1B anti-recycle timer cleared. At approximately 14:40, the CHHE-1A anti-recycle timer cleared. At approximately 14:45, an attempt was made to restart CHHE-1B in automatic using OP-409. The CHHE-1B 30-minute anti-recycle timer started at this time. At approximately 14:51, CHHE-1B tripped as heat load was added. The "C" phase motor overload relay was found tripped this time and was promptly reset. CHHE-1B was no longer available due to the 30-minute anti-recycle period.

At approximately 14:56, Preventive Maintenance Procedure PM-136A, "Control Complex Chiller CHHE-1A," was used to manually start and incrementally load CHHE-1A.

At 15:05, CR-3 commenced lowering power to comply with the actions of ITS 3.0.3. At 15:09, CR-3 stopped the power decrease at 2542 megawatts – thermal when it became evident that CHHE-1A had been successfully started and was accepting incremental loading.

At 16:18, CHHE-1A was fully loaded and declared operable. ITS 3.0.3 was exited to ITS 3.7.18, Condition A. At 16:50, power was restored to 100% RTP (2568 megawatts – thermal).

Initiation of a plant shutdown required by ITS is reportable to the NRC. At 18:30, on June 11, 2003, a non-emergency four-hour notification was made to the NRC Operations Center (Event Number 39924) in accordance with 10CFR50.72(b)(2)(i). This report is being submitted pursuant to 10CFR50.73(a)(2)(i)(B), 10CFR50.73(a)(2)(v)(D) and 10CFR50.73(a)(2)(vii).

CAUSE

The cause of this event was the incorrect calibration of the chiller motor overload relays attributed to inadequate work instructions. CHHE-1A motor overload relays were recalibrated on February 25, 2003, under Work Order 353212 to a setpoint between 299 – 311 amperes. CHHE-1B motor overloads were recalibrated on December 19, 2002, under Work Order 351725 to a setpoint between 299 – 311 amperes. As-found testing of the overload relays for this event found that the lowest settings on CHHE-1A and CHHE-1B were 230 amperes and 235 amperes, respectively. These overload relays are not subject to setpoint drift. This condition reinforces the conclusion that work instructions failed to address several key issues regarding the instantaneous overcurrent adjustment. The vendor bulletin provided the necessary technical highlights, but was insufficient to be used as a work instruction without more detail and/or knowledge of the equipment. Step by step work instructions were developed for the overload relay calibration since no procedure existed. However, several critical tasks were omitted.

The following conditions contributed to the event:

The CHHE-1B Hot Gas Bypass Valve (HGBV) [NA, XCV] did not cycle as required and resulted in a current spike which created an increased current demand. Investigation found a degraded vane switch used for control of the opening and closing of the HGBV. However, had the CHHE-1B motor overload relay been set to within 299 – 311 amperes, this current spike would not have resulted in CHHE-1B tripping.

CHHE-1A tripped in January 1998 while attempting to place a load on the chiller. CHHE-1A and CHHE-1B chiller motor overload relays were found to have been set incorrectly in December 1997. This condition was documented in Precursor Card PC-98-0719, but was not properly resolved. The chiller motor overload relays were rechecked and adjusted by a vendor service technician. However, the issue of insufficient knowledge within PEF for adjusting the dashpot relays was not addressed.

SAFETY CONSEQUENCES

The Control Complex Chilled Water System is designed to provide cooling water (chilled water) to CREVS during normal and post-accident conditions. The system is composed of two redundant trains with independent power supplies and controls, while utilizing some common system piping. Each Control Complex Chiller (CHHE-1A/1B) is designed to provide 219 tons of cooling for personnel comfort and ambient temperature control in critical equipment locations. The design basis document identifies a maximum cooling of 160 tons during normal operations and less than

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130 tons during post – Loss of Coolant Accident (LOCA) operation with CREVS in the emergency recirculation mode. Plant ITS require that both trains of cooling be operable in MODES 1-4. This event documents a loss of safety function when CHHE-1A and CHHE-1B were both unavailable due to the anti-recycle feature. The anti-recycle feature prevents subsequent motor starts for 30 minutes to allow motor winding temperatures to stabilize. CHHE-1A and CHHE-1B tripped when their respective overloads actuated to trip the compressor motors. No alarms are provided for this fault condition. Had a design basis event occurred when CHHE-1A and CHHE-1B were both unavailable due to trips while in the anti-recycle mode, the potential exists that the respective motor overload relays may not have been reset to allow restart of a chiller within the required 120 minutes. Chiller motor overload relay status can only be determined through visual inspection of the motor starter cabinet. Provisions for resetting the motor overload relays are not contained in Emergency Operating Procedure EOP-14, "Emergency Operating Procedure Enclosures." Resetting the motor overload relays may not have been accomplished without the assistance of Maintenance personnel.

For the above reasons, this event is considered to meet the Nuclear Energy Institute 99-02, Revision 2, definition of a Safety System Functional Failure.

Control Complex temperatures increased during the loss of both cooling water trains. Two areas (Inverter Room [VF] and Control Room [VI]) reached their monitoring limits in SP-300, "Operating Daily Surveillance Log." The small temperature excursion was not significant as the SP-300 limits are set to identify adverse trends during normal observations. The temperature was easily explained by the loss of cooling water and was quickly corrected when CHHE-1A was re-started. Area design temperature limits were not reached.

CHHE-1A demonstrated it could perform its post-accident design function when it was successfully started in manual mode of operation similar to the method used in EOP-14 during a post-LOCA scenario. Further, the post-LOCA scenario does not require Control Complex cooling for 120 minutes. The time duration allows for start-up of a Control Complex Chiller with a 40 minute allowance for a trip, anti-recycle time-out and subsequent start. During a post-LOCA scenario, the Emergency Operations Facility and Technical Support Center would be manned within 60 minutes. PEF believes sufficient time would be available to dispatch Maintenance personnel to troubleshoot and restart one train of the Control Complex Cooling System within the 120 minute window.

As-found testing of the overload relays found that the lowest setting on CHHE-1A was 230 amperes, while CHHE-1B was set to 235 amperes. The current rating equates to over 170 tons of cooling, which exceeds the design basis heat load for normal operation (160 tons summer time load) and the 130 tons required for worst case accident heat loads. A previous evaluation performed in Nuclear Condition Report (NCR) 79932 determined that for the design load of 160 tons, motor full load current required would be 201 amperes at the worst case degraded grid voltage. With the overload relays set to 230 amperes or above, the minimum design capacity for normal or accident operations was available even at degraded grid voltages when the chiller is started and incrementally loaded using the guidance contained in EOP-14.

The Appendix R Chiller, CHHE-2, [VK, CHU] was also available for use, if required, to provide cooling to the critical areas of the Control Complex. The unit is normally aligned to the Turbine Building Switchgear Rooms [NM] but could be aligned to the Control Complex rooms, if required.

Based on the above discussion, PEF concludes that the loss of CHHE-1A and CHHE-1B did not represent a reduction in the public safety.

CORRECTIVE ACTIONS

The motor overload relays for CHHE-1A/1B have been recalibrated.

Troubleshooting and repair of the CHHE-1B HGBV has been completed.

NCR 95966 was initiated to document this event. The corrective action to prevent recurrence and other corrective actions being tracked by this NCR are as follows:

Generate maintenance procedure or revise existing procedure for detailed instructions for current adjustment calibration of Allen-Bradley dashpot overload relays. Dry calibration should include special precautions for cleaning entire dashpot assembly. Instructions should also be provided for in-situ functional checks to preclude repeated overload relay disassembly. (Corrective Action to Prevent Recurrence)

Provide summary of lessons learned on dashpot relay calibration and post maintenance testing to the Electric Shop and Maintenance Planning personnel.

Implement Work Order 428431 to check HGBV operation and current limiter control on CHHE-1A.

Implement Work Order 428178 to check HGBV operation and current limiter control on CHHE-1B.

Perform an extent of condition review of motor starters with manual reset in safety related applications.

PREVIOUS SIMILAR EVENTS

PEF has reported one previous similar event associated with CHHE chiller motor overload relay settings:

Licensee Event Report (LER) 50-302/97-043-00, "A Deficiency in the Electrical Design Criteria Resulted in the Control Complex Chiller Motor Trip Set point Set Below the Full Load Ampere Rating," dated January 6, 1998.

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ATTACHMENTS

Attachment 1 - Abbreviations, Definitions, and Acronyms

Attachment 2 - List of Commitments

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ATTACHMENT 1

ABBREVIATIONS, DEFINITIONS AND ACRONYMS

CFR	Code of Federal Regulations
CHHE	Control Complex Chiller
CR-3	Crystal River Unit 3
CREVS	Control Room Emergency Ventilation System
EOP	Emergency Operating Procedure
HGBV	Hot Gas Bypass Valve
ITS	Improved Technical Specifications
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
NCR	Nuclear Condition Report
NRC	Nuclear Regulatory Commission
OP	Operating Procedure
PEF	Progress Energy Florida, Inc.
PM	Preventive Maintenance Procedure
RM	Radiation Monitor
RTP	Rated Thermal Power
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]}.

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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.	