Progress Energy

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

Ref: 10 CFR 50.73

December 14, 2006
3F1206-03

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

Subject: CRYSTAL RIVER UNIT 3 - LICENSEE EVENT REPORT 50-302/2006-002-00

Dear Sir:

Florida Power Corporation, currently doing business as Progress Energy Florida, Inc., hereby submits Licensee Event Report (LER) 50-302/2006-002-00. The LER discusses Emergency Diesel Generator EGDG-1A being inoperable for a period of time greater than allowed by the CR-3 Improved Technical Specifications (ITS). The EGDG-1A output breaker closing coil was not charged due to mispositioning of the charging motor direct current power control switch. During this time, EGDG-1B was removed from service for scheduled maintenance and testing, rendering both trains of the onsite Emergency Alternating Current System inoperable. This report is being submitted pursuant to 10CFR50.73(a)(2)(i)(B) and 10CFR50.73(a)(2)(v)(D).

No new regulatory commitments are made in this letter.

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

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

IE22

NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 06/30/2007

Estimated burden per response to comply with this mandatory 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 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)

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4. TITLE

Emergency Diesel Generator In A Condition Prohibited By Technical Specifications Due To Mispositioning

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
									N/A	05000
11	01	2006	2006	- 002 -	00	12	14	2006	FACILITY NAME: N/A	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 – Engineer (Licensing & 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

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)*

At 14:00, on November 1, 2006, Progress Energy Florida, Inc. (PEF), Crystal River Unit 3 (CR-3) was operating in MODE 1 (POWER OPERATION) at 100 percent RATED THERMAL POWER when attempts to close Emergency Diesel Generator EGDG-1A output Breaker 3209 during a surveillance test were not successful. The breaker charging motor direct current (DC) power control switch was found in the OFF position and the breaker closing spring was not charged, rendering EGDG-1A inoperable. A review concluded that EGDG-1A was inoperable from October 4, 2006 through 18:11 on November 1, 2006. Also, EGDG-1B was taken out of service for scheduled maintenance from 04:31 on October 18, 2006 through 15:30 on October 19, 2006, rendering both emergency diesel generators inoperable during this time. The cause for this event was that Operations did not ensure Breaker 3209 was returned to the correct operable condition following maintenance. The DC power control switch was restored to the ON position, the breaker closing spring charged and Breaker 3209 successfully closed. This report is being submitted pursuant to 10CFR50.73(a)(2)(i)(B) and 10CFR50.73(a)(2)(v)(D). This condition does not represent a reduction in the public health and safety. No previous similar occurrences have been reported.

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

EVENT DESCRIPTION

At 14:00, on November 1, 2006, Progress Energy Florida, Inc. (PEF), Crystal River Unit 3 (CR-3) was operating in MODE 1 (POWER OPERATION) at 100 percent RATED THERMAL POWER when attempts to close Emergency Diesel Generator EGDG-1A [EK, DG] output Breaker 3209 [EK, BKR] during the performance of Surveillance Procedure SP-354A, "Monthly Functional Test of the Emergency Diesel Generator EGDG-1A," were not successful. An investigation concluded that the Breaker 3209 charging motor [EK, MO] direct current (DC) power control switch [EK, 33] was in the OFF position, instead of the expected ON position. At 14:20, on November 1, 2006 the DC power control switch was restored to the ON position, the charging motor operated to charge the breaker closing spring and Breaker 3209 was successfully closed. Closing springs were verified to be charged with the charging motor DC power control switch in the ON position for the remaining Engineered Safeguards (ES) 4160V (volt) breakers [EB, BKR]. Closing springs were verified to be charged for the ES 480V breakers [ED, BKR] in the open position. Closed ES 480V breakers will not have charged springs.

Breaker 3209 is a Type 5HK, 1200 through 3000 ampere, breaker manufactured by Asea Brown Boveri (ABB). The breaker closes with the force of a charged closing spring that closes the breaker contacts. Immediately after breaker closure, the charging motor actuates to recharge the closing spring to enable the breaker to be capable of future closures. The closing action of the breaker causes the charging of the opening spring. The closing spring is not used or discharged when the breaker opens.

The charging motor is powered by DC control power. The control power may be interrupted at the DC knife switch, located in the upper portion of the cubicle, which isolates DC control power to all breaker functions and the charging motor. The charging motor also has a DC power control toggle switch in the lower portion of the breaker cubicle which isolates power to the charging motor only. This charging motor toggle switch was found OFF. This switch is physically located in a position such that the lower cubicle door must be opened to gain reasonable access. It is possible to actuate the toggle switch with just the small sliding door open, using a tool.

The existence of the discharged closing spring had the consequence of rendering EGDG-1A inoperable because output Breaker 3209 was unable to close. Improved Technical Specification (ITS) 3.8.1, requires two emergency diesel generators (EDGs), each capable of supplying one train of the onsite Class 1E AC (Alternating Current) Electrical Power Distribution System, to be OPERABLE in MODES 1, 2, 3 and 4. ITS 3.8.1, Condition B, allows one EDG to be inoperable for 72 hours. At the time of discovery, EGDG-1A was already under the provisions of ITS 3.8.1, Condition B, for performance of SP-354A. Breaker 3209 was restored to an operable condition before completion of SP-354A.

During the EGDG-1A outage conducted on October 4, 2006, Breaker 3209 was removed from its cubicle in the Train A ES switchgear and was transported to the Breaker Test Shop (BTS) for testing using Preventive Maintenance procedure PM-101, "4.16KV (kilovolt) and 6.9KV Switchgear Breakers." During PM-101 testing, the breaker removed from the Train A ES switchgear was replaced with a refurbished breaker from the warehouse.

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After Breaker 3209 was returned to the ES switchgear rooms, it was the subject of testing in the Train B ES Switchgear Room. It is certain that the charging motor DC power control toggle switch was operated at this time, as PM-101 testing required. Following this testing, the breaker was transported to the Train A ES Switchgear Room and subsequently installed into the Breaker 3209 cubicle. Breaker installation was performed as "skill of the craft" and was not documented or governed by procedure or specific instructions capable of either tracking configuration or ensuring proper restoration. Operations personnel did not verify breaker closing spring status or status of the charging motor DC power control toggle switch as part of the Post Maintenance Testing process.

During performance of the final portion of SP-354A, Breaker 3209 closed as expected. With the DC power control toggle switch in the incorrect position, the charging motor did not charge the Breaker 3209 closing spring. Since Breaker 3209 performed as expected, Operations and Maintenance personnel had no reason to recheck or verify the position of the charging motor DC power control toggle switch located in the closed breaker cubicle. Although the precise sequence of events cannot be determined, mispositioning of the Breaker 3209 DC charging motor DC power control toggle switch likely occurred during activities performed on October 4, 2006. Based on this information, EGDG-1A was inoperable from October 4, 2006, through 18:11 on November 1, 2006.

A review was performed to determine if EGDG-1B was removed from service between October 4, 2006 and November 1, 2006. EGDG-1B was inoperable from 04:31 on October 18, 2006, through 15:30 on October 19, 2006, (approximately 35 hours) for scheduled maintenance and testing under ITS 3.8.1. During this time, both EDGs were technically inoperable.

EGDG-1A being inoperable from October 4, 2006 through 18:11 on November 1, 2006 is reportable under 10CFR50.73(a)(2)(i)(B). Both EDGs being operable from 04:31 on October 18, 2006 through 15:30 on October 19, 2006 is reportable under 10CFR50.73(a)(2)(v)(D). This condition is not reportable under 10CFR50.72(b)(3)(v) since the condition did not exist at the time of discovery.

SAFETY CONSEQUENCES

In the event of a loss of offsite power, the EDGs will automatically fast-start and supply the required ES loads by feeding the ES 4160V busses. The EDGs are required to be operable to provide motive power to equipment required for safe shutdown of the plant and for the mitigation of accidents. This event resulted in the inoperability of EGDG-1A for approximately 28 days. During this period, EGDG-1B was out of service for routine maintenance for approximately 35 hours, rendering both EDGs inoperable.

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The event was not safety significant. Alternate AC Diesel Generator EGDG-1C was available during this time and was capable of supplying the "A" ES 4160V bus, if needed. Additionally, the condition present on Breaker 3209 was quickly diagnosed by the control room staff and was corrected within 11 minutes from the time of discovery of the mispositioned DC power control toggle switch.

Using the CR-3 current Probabilistic Safety Assessment Model of Record (P-02-0001, Revision 3), this plant condition can be evaluated for risk significance. The following bounding assumptions have been made: (1) Breaker 3209 is assumed be unrecoverable; (2) Breaker 3209 is assumed to be out for one month; and (3) EGDG-1B is assumed to be out of service for 2 days. These assumptions are conservative and bounding.

The delta core damage frequency for EGDG-1A being out of service is approximately 2.00E-6 per year and the Incremental Core Damage Probability (ICDP) is less than 2.00E-7 for a one month exposure time. The delta core damage frequency of EGDG-1A and EGDG-1B being out of service concurrently is approximately 3.00E-5 per year and the ICDP is less than 2.00E-7 for a two day exposure time.

Therefore, the total ICDP for this event is approximately 4.00E-7. This is a very small increase in risk and is considered to be very low risk significance.

Based on the above discussion, PEF concludes that inoperability of both EDGs for a period of two days did not represent a reduction in the public health and safety. Since the identified condition is reportable under 10CFR50.73(a)(2)(v)(D), this event does meet the Nuclear Energy Institute definition of a Safety System Functional Failure (NEI 99-02, Revision 2).

CAUSE

The cause for this event was that Operations did not ensure Breaker 3209 was returned to the correct operable condition following maintenance.

PM-101 was conducted on the refurbished Breaker 3209 satisfactorily in the BTS on October 4, 2006. This testing included the operation of the charging motor toggle switch to ON and the cycling of the breaker to verify breaker operation. After this testing, the breaker was transported to the Train B ES switchgear room, where it received further testing which included the operation of the charging motor and the cycling of the breaker. The personnel performing PM-101 were experienced electricians.

The breaker was then transported to the Train A ES switchgear room. It was originally expected that Operations personnel would lift the clearance, rack the breaker in, and restore control power via the DC knife switch. Operations Procedure OP-703, "Plant Distribution System," if used, would ensure that the DC charging motor toggle switch for Breaker 3209 was in the ON position and that the charging springs were charged.

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The clearance restoration position for Breaker 3209 was originally "Racked In". However, discussions between the personnel involved resulted in a decision to have Electrical Shop personnel perform the breaker racking for Breaker 3209 since this breaker would be racked in and out by Electrical Shop personnel during performance of SP-907A, "Monthly Functional Test of 4160V ES Bus "A" Undervoltage and Degraded Grid Relaying." The clearance restoration position was modified to "Tag Removed." Electrical Shop personnel did not use OP-703 to restore the breaker. At the time, the electricians were not expected to use OP-703 when racking breakers. This evolution was performed via "skill of the craft." The Operations and Electrical Shop personnel in the switchgear room were experienced personnel.

SP-907A was subsequently performed to test the Train A ES Bus undervoltage relaying, followed by performance of SP-354A, as the post maintenance test for Breaker 3209. Compliance Procedure CP-113D, "Post Maintenance Testing," requires that safety related breakers be tested operationally and functionally following breaker replacement or any maintenance or operation which requires the breaker to be racked out. CP-113D does not require ensuring that the breaker charging springs recharge on 4160V breakers following breaker closure. At the conclusion of the maintenance and testing on October 4, 2006, the breaker closing spring should have been charged with the charging motor toggle switch in the ON position, but this status was never checked as part of the Post Maintenance Testing process.

CR-3 concluded that malicious tampering was not a likely cause for the Breaker 3209 charging motor DC power control toggle switch being in the OFF position, instead of the expected ON position. Indicators used by Security personnel to determine the likelihood of sabotage-related activities were not present. Site relations between management and employees are considered sound. There is no history of malicious activities within the Crystal River Energy Complex or Progress Energy as a whole. There is a robust Fitness For Duty program and a Continual Behavioral Observation program at CR-3, both of which are used to monitor for suspicious activity.

Local indicators present within the ES Switchgear room tend to make an intentional act less likely as an explanation for DC power control toggle switch mispositioning. Access to the room requires that personnel "swipe" their badge through the card-reader, tracking all access electronically. Also, anyone with intent to disable Breaker 3209 would know that routine Operations and Security tours through the area could very easily result in their discovery. Security records for access via Security Door C-201 were reviewed and CR-3 concluded that no personnel entered the room other than personnel who are expected to enter as part of their normal duties. Therefore, CR-3 does not consider that willful tampering was responsible for this event.

CORRECTIVE ACTIONS

1. The DC power control switch was restored to the ON position, the charging motor operated to charge the breaker closing spring and Breaker 3209 was successfully closed.

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2. An extent of condition review was performed. Other Train A and Train B ES 4160V switchgear breakers were inspected. The closing springs were verified to be fully charged with their charging motor DC power control toggle switches in the ON position. Train A and Train B ES 480V breakers were inspected. The closing springs were verified to be fully charged if the individual breaker was open. (Note: 480v breakers which are closed will not have charged springs.)

3. Other actions associated with this event are being addressed in CR-3 Corrective Action Program Nuclear Condition Report NCR 211171.

PREVIOUS SIMILAR EVENTS

No previous similar events involving equipment inoperability due to a mispositioned breaker charging motor DC control power switch have been reported to the NRC by CR-3.

ATTACHMENTS

Attachment 1 - Abbreviations, Definitions, and Acronyms
Attachment 2 - List of Commitments

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ATTACHMENT 1

ABBREVIATIONS, DEFINITIONS AND ACRONYMS

ABB	Asea Brown Boveri
AC	Alternating Current
BTS	Breaker Test Shop
CFR	Code of Federal Regulations
CP	Compliance Procedure
CR-3	Crystal River Unit 3
DC	Direct Current
EGDG	Emergency Diesel Generator
ES	Engineered Safeguards
ICDP	Incremental Core Damage Probability
ITS	Improved Technical Specifications
KV	Kilovolt
NCR	Nuclear Condition Report
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
OP	Operating Procedure
PEF	Progress Energy Florida, Inc.
PM	Preventive Maintenance Procedure
SP	Surveillance Procedure
V	Volt

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 PEF in this document. Any other actions discussed in the submittal represent intended or planned actions by PEF. They are described 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.	