



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
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ATLANTA, GEORGIA 30303-8931

October 30, 2008

Mr. Dale E. Young, Vice President  
Crystal River Nuclear Plant (NA1B)  
Supervisor, Licensing &  
Regulatory Programs  
15760 West Power Line Street  
Crystal River, FL 34428-6708

SUBJECT: CRYSTAL RIVER UNIT 3 – NRC INTEGRATED INSPECTION REPORT  
05000302/2008004

Dear Mr. Young:

On September 30, 2008, the US Nuclear Regulatory Commission (NRC) completed an inspection at your Crystal River Unit 3. The enclosed integrated inspection report documents the inspection findings which were discussed on October 06, 2008, with Mr. D. Young and other members of your staff.

The inspection examined activities conducted under your license as they related to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, no findings of significance were identified. However, a licensee-identified violation which was determined to be of very low safety significance is listed in Section 4OA7 of this inspection report. NRC is treating this violation as a non-cited violation (NCV) consistent with Section VI.A.1 of the NRC's Enforcement Policy. If you contest the NCV in this report you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-001; with copies to the Regional Administrator Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Crystal River Unit 3 site.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document

system (ADAMS). Adams is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

*/RA/*

Marvin D. Sykes, Chief  
Reactor Projects Branch 3  
Division of Reactor Projects

Docket No. 50-302  
License No. DPR-72

Enclosure: Inspection Report 05000302/2008004  
w/Attachment: Supplemental Information

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Letter to Dale E. Young from Marvin D. Sykes dated October 30, 2008

SUBJECT: CRYSTAL RIVER UNIT 3 – NRC INTEGRATED INSPECTION REPORT  
05000302/2008004

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos: 50-302

License Nos: DPR-72

Report No: 05000302/2008004

Licensee: Progress Energy (Florida Power Corporation)

Facility: Crystal River Unit 3

Location: Crystal River, FL

Dates: July 1, 2008 – September 30, 2008

Inspectors: T. Morrissey, Senior Resident Inspector  
R. Reyes, Resident Inspector  
E. Michel, Senior Reactor Inspector (Section 1R07)

Approved by: M. Sykes, Chief,  
Reactor Projects Branch 3  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000302/2008004; 07/01/2008-09/30/2008; Crystal River Unit 3; Routine Integrated Report.

The report covered a three month period of inspection by resident inspectors and a region based reactor inspector. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process", Revision 4, dated December 2006.

A. Inspector Identified & Self-Revealing Findings

None

B. Licensee Identified Violations

One violation of very low safety significance, which was identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. The violation and corrective action tracking number is listed in Section 40A7 of this report.

## REPORT DETAILS

### Summary of Plant Status:

The unit began the inspection period at 100 percent rated thermal power (RTP). On August 24, the Unit RTP was manually reduced to 65 percent as a result of a condensate pump failure. The Unit was then manually tripped due to unstable feed water flow oscillations. On August 28, the plant was restarted and obtained 100 percent RTP on August 30. The unit operated at essentially 100 percent RTP for the remainder of the inspection period.

### REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

#### 1R01 Adverse Weather Protection

##### a. Inspection Scope

On August 18, 2008, the inspectors reviewed the licensee's storm preparations for tropical storm Fay. The licensee used the checklists in Emergency Management Procedure EM-220, Violent Weather, to plan/implement actions should the storm approach. The inspectors verified that the licensee's violent weather committee had been established and that preparations were made for tropical storm conditions. The nuclear condition report (NCR) database was reviewed to verify that the licensee was identifying and correcting adverse weather protection issues.

##### b. Findings

No findings of significance were identified. Violent weather conditions did not occur at the site.

#### 1R04 Equipment Alignment

##### Partial Equipment Walkdowns

##### a. Inspection Scope

The inspectors performed walkdowns of the critical portions of the selected trains to verify correct system alignment. The inspectors reviewed plant documents to determine the correct system and power alignments, and the required positions of select valves and breakers. The inspectors verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact mitigating system availability. The inspectors verified the following four partial system alignments in system walkdowns using the listed documents:

- Auxiliary feed water pump FWP-7 and turbine-driven emergency feedwater pump EFP-2, using operating procedure OP-605, Feedwater System, and OP-450, Emergency Feedwater System, while the diesel-driven emergency feedwater pump EFP-3 was out of service for planned maintenance.

- A Train decay heat closed cycle cooling (DC) and raw water (RW) pump RWP-3A systems using OP-404, Decay Heat Removal System and OP-408, Nuclear Services Cooling System, while B train emergency core cooling systems (ECCS), (DC, decay heat removal (DHR) and RW) were out of service for planned maintenance.
- B Train DHR and DC systems using OP-404, Decay Heat Removal System, while the A train DC system was out of service for DC pump motor replacement.
- Raw water pumps RWP-3B and RWP-2B, and B train DC system, using OP-408, and OP-404 respectively, while the A ECCS were out of service for planned maintenance.

b. Findings

No findings of significance were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors conducted a detailed walkdown/review of accessible portions of both trains of the DC system. The inspectors used licensee operating procedure, OP-404, Decay Heat Removal System, as well as design documents, and reviewed the applicable portions of the Final Safety Analysis Report (FSAR) to verify proper system alignment. This completes one sample of a complete system alignment.

The walkdown included evaluation of selected system piping and supports against the following considerations:

- Piping and pipe supports did not show evidence of water hammer.
- Oil reservoir levels indicated normal.
- Snubbers did not indicate any observable hydraulic fluid leakage.
- Component foundations were not degraded.
- No fire protection hazards.

A review of outstanding maintenance work orders was performed to verify that any deficiencies did not significantly affect the system function. In addition, the inspectors reviewed nuclear condition reports (NCRs) to verify that system problems were being identified and appropriately resolved. The DC System Health Report (July to December 2007) as well as the system engineers walkdown report, (dated April 2, 2008) were reviewed to determine whether system condition was properly assessed and deficient conditions, if identified were placed in the corrective action program.

b. Findings

No findings of significance were identified.

## 1R05 Fire Protection

### Fire Area Walkdowns

#### a. Inspection Scope

The inspectors walked down accessible portions of the plant to assess the licensee's implementation of the fire protection program. The inspectors checked that the areas were free of transient combustible material and other ignition sources. Also, fire detection and suppression capabilities, fire barriers, and compensatory measures for fire protection problems were verified. The inspectors checked fire suppression and detection equipment to determine whether conditions or deficiencies existed which could impair the function of the equipment. The inspectors selected the areas based on a review of the licensee's probabilistic risk assessment. The inspectors also reviewed the licensee's fire protection program to verify the requirements of the FSAR, Section 9.8, Plant Fire Protection Program, were met. Documents reviewed are listed in the attachment. The inspectors toured the following five areas important to reactor safety:

- Auxiliary building sea water room
- A and B train 4160-Volt switchgear rooms
- Make-up pump area
- Emergency feed pump EFP-3 building
- Intermediate building 119' level, reactor building personnel hatch area

#### b. Findings

No findings of significance were identified.

## 1R07 Heat Sink Performance (Triennial Review)

#### a. Inspection Scope

From August 18 - 21, 2008, the inspectors reviewed documentation and performed plant walkdowns for a sample of risk significant Heat Exchangers (HXs) to ensure that deficiencies that could mask or degrade performance were identified and corrected. The inspectors also verified that HX testing, monitoring, and maintenance activities were consistent with Generic Letter (GL) 89-13 licensee commitments, and industry guidelines. The inspectors selected the following HXs to review:

- Service Water Heat Exchanger (SWHE) -1A
- Decay Heat Exchanger (DCHE) -1A

For the HXs listed above, the inspectors reviewed performance testing methodology and results, basis for acceptance criteria, frequency of performance monitoring, inspection/cleaning methods and results, HX cleaning and inspection schedules, associated pump discharge pressure monitoring and trending, and eddy current/visual inspection records. In addition, the inspectors conducted a walkdown of the HXs to assess general material condition and to identify any degraded conditions.

Enclosure

The inspectors also reviewed the general health of the ultimate heat sink (UHS) and its subcomponents via review of design basis documents, engineering evaluations, system health reports, intake structure inspection results, Inservice Testing of safety-related components, safety-related buried piping inspections, Nuclear Service and Decay Heat Sea Water RW intake pipe diver inspections, intake canal surveillances, UHS temperature monitoring procedures, root cause evaluations for the RW system, and discussions with system engineers. These documents were reviewed to verify design bases were maintained and to verify adequate RW and UHS system performance under current preventive maintenance, inspections, and frequencies. The UHS subcomponents selected for Inservice Testing review were:

- Decay Heat Service Sea Water Pump (RWP-3A)
- RWP-3B Discharge Check Valve (RWV-34)

In addition, the inspectors performed walkdowns of the RW intake structure, RW system located in the sea water room, and partial walkdowns of the intake and discharge canals to assess general material condition and proper operation.

The inspectors reviewed corrective action program documents to verify that industry operating experience, potential common cause problems, and problems which could affect system performance were entered into the corrective action program for evaluation and resolution. Documents reviewed are listed in the attachment.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

Resident Inspector Quarterly Review

a. Inspection Scope

On September 2, the inspectors observed licensed operators' response and actions for the Crystal River Unit 3 licensed operator continuing training simulator evaluated session SES-33, Loss of Main Feed Pump Requiring a Reactor Manual Trip. During the SES, the inspectors observed operators and the evaluators to verify that operator performance was adequate and evaluators were identifying and documenting any potential crew performance problems. Additionally, the inspectors also observed the crew to verify the items listed below were satisfactorily performed. Scenario challenges included the loss of a feedwater pump with a failure of its associated block valve to fully close, with a subsequent main steam line break. Emergency Operating Procedures (EOPs) used included; EOP-02, Vital System Status Verification; and EOP-5, Excessive Heat Transfer. At the conclusion of the scenario, the inspectors attended the management and crew critique to verify any potential operator performance issues were adequately documented and addressed by the evaluators.

- Clarity and formality of communication
- Ability to take timely action to safely control the unit
- Prioritization, interpretation, and verification of alarms

- Correct use and implementation of off-normal and emergency operation procedures; and emergency plan implementing procedures
- Control board operation and manipulation, including high-risk operator actions
- Oversight and direction provided by supervision, including ability to identify and implement appropriate technical specification actions, regulatory reporting requirements, and emergency plan classification and notification
- Crew overall performance and interactions

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the licensee's effectiveness in performing routine maintenance activities. The review included an assessment of the licensee's practices pertaining to the identification, scope, and handling of degraded equipment conditions, as well as common cause failure evaluations, and the resolution, of historical equipment problems. For those systems, structures, and components within the scope of the maintenance rule per 10 CFR 50.65 (a)(1) and (a)(2) classifications were justified in light of the reviewed degraded equipment condition. The inspectors verified that the licensee was appropriately identifying and documenting maintenance rule issues in the corrective action program. The documents reviewed are listed in the attachment. The inspectors conducted this inspection for three issues.

- NCR 283250, Service water pump SWP-1A shaft seal leakage
- NCR 274599, The lack of an investigation to evaluate the aggregate of the functional failures under maintenance rule a(1)
- NCR 273323, C channel reactor protection system power loss

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the risk impact associated with those activities listed below and verified the licensee's associated risk management actions. This review primarily focused on equipment determined to be risk significant within the maintenance rule. The inspectors also assessed the adequacy of the licensee's identification and resolution of problems associated with risk management including emergent work activities. The licensee's implementation of compliance procedure CP-253, Power Operation Risk Assessment, was verified in each of the following six work week assessments.

- Work Week, 08W26, Risk assessment for operations with FWP-7 and D vital battery inverter out of service for planned maintenance.
- Work Week, 08W29, Risk assessment for operations in Yellow risk configuration with B ECCS systems out of service for planned maintenance.
- Work Week, 08W31, Risk assessment for operations with SWP-1A out of service for planned maintenance.
- Work Week, 08W32, Risk assessment for operations during the DC Pump 1A motor replacement
- Work Week, 08W33, Risk assessment for operations in Yellow risk configuration while maintenance was being performed on make-up valve MUV-58, and emergent work changes due to tropical storm Fay approaching the Florida west coast.
- Work Week, 08W35, Risk assessment for operations in Yellow risk configuration for operations with the A train ECCS out of service for planned maintenance.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

The inspectors reviewed the following five NCRs to verify operability of systems important to safety was properly established, that the affected components or systems remained capable of performing their intended safety function, and that no unrecognized increase in plant or public risk occurred. The inspectors determined if operability of systems or components important to safety was consistent with technical specifications, the FSAR, 10 CFR Part 50 requirements, and when applicable, NRC Inspection Manual, part 9900, Technical guidance, "Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety." The inspectors reviewed the licensee's NCRs, work schedules, and engineering documents to check if operability issues were being identified at an appropriate threshold and documented in the corrective action program, consistent with 10 CFR 50, Appendix B requirements; and licensee procedure NGGC-CAP-200, Corrective Action Program.

- NCR 258769, Potential crack in B ES battery cell 109
- NCR 287257, Degraded A train RWP flush flow rate
- NCR 286252, Service water heat exchanger SWHE-1D found with excessive grass on tube sheets
- NCR 289313, Decay heat purification piping may not have been adequately filled/vented
- NCR 295834, EFP-3 piping evaluation for missed preventive maintenance on underground piping.

1R18 Plant ModificationsTemporary Plant Modificationsa. Inspection Scope

The inspectors reviewed two temporary modifications, as described below, and the associated 10 CFR 50.59 screening against the system design basis documentation and FSAR to verify the modification did not adversely affect the safety functions of important safety systems. Additionally, the inspectors reviewed licensee procedure EGR-NGGC-00005, Engineering Change, to assess if the modification was properly developed and implemented.

- EC 70455R0, Temporarily revise core flood valve CFV-6 open position indication lamp circuitry
- WO 1378457, Install/remove Keithly digital voltmeter for rod 2-4 position indication

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testinga. Inspection Scope

The inspectors witnessed and/or reviewed post-maintenance test procedures and/or test activities, as appropriate, for selected risk significant systems to verify whether: (1) testing was adequate for the maintenance performed; (2) acceptance criteria were clear, and adequately demonstrated operational readiness consistent with design and licensing basis documents; (3) test instrumentation had current calibrations, range, and accuracy consistent with the application; (4) tests were performed as written with applicable prerequisites satisfied, and (5) equipment was returned to the status required to perform its safety function. The six post-maintenance tests reviewed are listed below:

- Surveillance procedure SP-146A, EFIC Monthly Functional Test (During Modes 1, 2, 3), after performing maintenance on EFV-11 per work order WO 1382773
- Compliance procedure CP-140, after performing maintenance on make-up valve MUV-544 per WO 1338476
- SP-340A, RWP-3A, DCP-1A and Valve Surveillance (DCP-1A portion only) and performance test PT-136B, DC System Flow Balance and EGDG KW Loading, after performing DCP1A motor replacement per WO 1127658
- SP-340D, RWP-3B, DCP-1B and Valve Surveillance, and SP-340E, DHP-1B, BSP-1B and Valve Surveillance, after performing maintenance on B ECCS systems per WOs 1013116, 1056119, 1109796, 1034560 and 1032737

- SP-435, Valve Testing during Cold Shutdown, and Maintenance Procedure MP-543, Air Operated Diagnostic Testing, after performing actuator refurbishment on service water valve SWV-47 per WO 00800710.
- SP-344A, RWP-2A, SWP-1A and Valve Surveillance, and SP-344B, RWP-2B, SWP-1B and Valve Surveillance (Section 4.2.2 Only), after performing maintenance on the raw water pump RWP-2A discharge check valve, RWV-38, per WO 1125958

b. Findings

No findings of significance were identified.

1R20 Refueling and other Outage Activities

Mode 3 Forced Outage Due to Loss of a Condensate Pump and Subsequent Manual trip due to Main Feedwater Flow Oscillation

a. Inspection Scope

During the forced outage, the inspectors observed and monitored licensee controls over the outage activities listed below. Documents reviewed are listed in the Attachment.

- Outage related risk assessment monitoring
- Controls associated with reactivity management, electrical power alignments and containment closure and integrity
- Implementation of equipment clearance activities
- Reactor mode changes
- Containment inspection
- Reactor startup
- Reactor power ascension and related testing

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors observed and/or reviewed seven surveillance tests listed below to verify that technical specification surveillance requirements were followed and that test acceptance criteria were properly specified. The inspectors verified that proper test conditions were established as specified in the procedures, that no equipment preconditioning activities occurred, and that acceptance criteria had been met. Additionally, the inspectors also verified that equipment was properly returned to service and that proper testing was specified and conducted to ensure that the equipment could perform its intended safety function following maintenance or as part of surveillance testing.

In-Service Test:

- SP- 340B, DHP-1A, BSP-1A and Valve Surveillance

Surveillance Test:

- SP- 135B, Engineered Safeguards Actuation Channel 2 System Response Time Test
- SP-354B, Monthly Functional Test of the Emergency Diesel Generator EGDG-1B
- SP-385B, Control Complex Chiller (CHHE-1B) Functional Test
- SP-340E, DHP-1B, BSP-1B & Valve Surveillance
- PT-911, PPIP-1 Performance Test

Reactor Coolant System Leak Determination Test:

- SP- 317, RC System Water Balance Inventory

b. Findings

No findings of significance were identified.

## 4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) VerificationInitiating Events and Mitigating Systems Cornerstonesa. Inspection Scope

The inspectors checked the accuracy of the performance indicators listed below. Performance indicator (PI) data submitted from July, 2007 through August, 2008, was compared for consistency to data obtained through the review of engineering department records, control room logs, monthly operating reports, and licensee event reports. Performance indicator definitions and guidance contained in NEI 99-02, Regulatory Assessment Performance Guideline, Rev. 5 were used to check the reporting for each data element. The inspector verified the licensee accurately reported the data. In addition, the inspectors interviewed licensee personnel associated with PI data collection, evaluation, and distribution. The inspectors checked that any deficiencies affecting the licensee's performance indicator program were entered into the corrective action program (CAP) and appropriately resolved.

- Safety System Functional Failures

b. Findings

No findings of significance were identified.

Enclosure

## 4OA2 Problem Identification and Resolution

### .1 Daily Review

#### a. Inspection Scope

As required by Inspection Procedure 71152, Identification and Resolution of Problems, and in order to help identify equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished by attending daily plant status meetings, interviewing plant operators and applicable system engineers, and accessing the licensee's computerized database.

#### b. Findings

No findings of significance were identified.

### .2 Annual Sample Review- Operator Work Around

#### a. Inspection Scope

The inspectors reviewed the operator workaround program to verify the licensee was identifying workarounds at an appropriate threshold and entering them into the corrective action program. The inspectors performed an evaluation of the potential cumulative effect of all outstanding operator workarounds. Documents reviewed are listed in the attachment.

#### b. Findings

No findings of significance were identified.

### .3 Annual Sample Review

#### a. Inspection Scope

The inspectors reviewed a priority one NCR that addressed two functional failures of emergency diesel generators (EGDGs) which caused the maintenance rule (MR) system reliability criteria to be exceeded. The inspectors checked that the issues had been completely and accurately identified in the licensee's corrective action and maintenance rule programs, and that safety concerns were properly classified and prioritized for resolution, apparent cause determination was sufficiently thorough, and appropriate corrective actions assignments and MR a(1) goals were implemented in a manner consistent with the licensee's program procedures.

#### b. Findings

No findings of significance were identified. Within approximately a two-month time span, Dresser coupling failures resulted in inoperability of two EGDGs. The first occurred on November 13, 2007 on the safety related EGDG-1A (NCR 254518), and the second occurred on January 17, 2008, on the non-safety related EGDG-1C (NCR

262398). Both failures occurred during surveillance testing and each failure was a result of a failed Dresser coupling on the lube oil system that became loose due to vibration. A priority one NCR, NCR 264799, was written to address the MR aspects of the failures, extent of condition, and assign corrective actions to prevent recurrence. The inspectors found that investigation of the issues was thorough, and immediate actions to address operability of the engines were appropriate. However, the inspectors found that the licensee was not timely in finalizing some corrective action assignments and determining/implementing the MR a(1) monitoring goals. For example, the corrective actions (CA) had been reviewed by the Self Evaluation Review Board (SERB) in April and the Plant Nuclear Safety Committee (PNSC) in July. However at the time of the inspectors review in August, CA assignments were not finalized. In addition, proposed MR a(1) goals were rejected by the Maintenance rule expert panel (MREP) held in August.

On August 28, the inspectors communicated to plant management the observations relating to the untimely CA assignments and untimely development of the MR a(1) goals. Although the SERB, PNSC and MREP had provided good critique on the NCR CA assignments, the inspectors noted it had been seven months since the second functional failure occurred and that CA assignments and MR a(1) goals were still not finalized. The ownership of resolving the NCR issues, as presented by the various review groups, was lacking and was not commensurate with a priority one NCR. The licensee acknowledged the inspectors observations and initiated NCR 300015 to address the untimely handling of the CA assignments and the MR a(1) goals. The inspectors did not identify any regulatory issues as a result of this review.

#### 4OA3 Event Follow-up

##### Operator Performance during Non-Routine Event

###### a. Inspection Scope

For the two non-routine plant evolutions described below, the inspectors reviewed the operating crew's performance, operator logs, control board indications, and the plant computer data to verify that operator response was in accordance with plant procedures.

- August 24, Rapid power reduction to approximately 65 percent in accordance with AP-510, Rapid Power Reduction, and subsequent manual reactor trip due to feedwater pump oscillations in accordance with EOP-2, Vital System Status Verification
- August 28, Reactor power ascension in accordance with OP-203, Plant Startup

###### b. Finding

No findings of significance were identified.

40A5 Other Activities.1 Quarterly Resident Inspector Observations of Security Personnel Activitiesa. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status reviews and inspection activities.

b. Findings

No findings of significance were identified.

.2 (Open) NRC Temporary Inspection (TI) 3515/176, Emergency Diesel Generator Technical Specification Requirements Regarding Endurance and Margin Testinga. Inspection Scope

The objective of this TI was to gather information to assess the adequacy of nuclear power plant emergency diesel generator (EDG) endurance and margin testing as prescribed by plant-specific technical specifications (TS). The inspector interfaced with the appropriate station staff to obtain the information specified in Attachment 1 of the TI, Worksheet. The TI applies to all operating nuclear power reactor licensees that use EDGs as the onsite standby power supply. The inspector verified the accuracy of the information by review of TS, EDG Design Basis Event (DBE) loading calculations, EDG endurance run test procedures, test data from the last three endurance tests performed on each EDG, EDG ratings, and EDG operating history. The information gathered will be forwarded to Nuclear Reactor Regulation/Division of Engineering/Electrical Engineering Branch (NRR/DE/EEEB) for further review to assess the adequacy and consistency of EDG testing at nuclear stations.

b. Findings and Observations

The TI is presently scheduled to be open until August 31, 2009, pending completion of the NRR/DE/EEEB review.

40A6 ExitExit Meeting Summary

On October 6, 2008, the resident inspectors presented the inspection results to

Mr. D. Young, Site Vice President and other members of licensee management. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

#### 4OA7 Licensee Identified Violation

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as NCV.

License Condition 2.C.(9) states, in part, that Florida Power Corporation shall implement and maintain in effect all provisions of the approved fire protection program as described in the FSAR. The FSAR, section 9.8.4, states, in part, that administrative controls covering CR3's Fire Protection Program are provided by the Fire Protection Plan. The Fire Protection Plan, section 1.6.2, Implementing Documents, references SP-367, Fire Service Valve Alignment and Operability Check, to verify semiannually the operability of Post Indicator Valves (PIV). SP-367, Revision 33, section 4.2.1.1 contains instructions to cycle PIVs listed in Enclosure 3 and to leave the valves in the required position. Enclosure 3 specifies a required position for fire service valve FSV-604 as "Sealed Open." Contrary to the above, on January 19, 2008, during performance of the semiannual PIV operability check FSV-604 was left in the closed position. This issue was more than minor because the fire protection for several fire areas were considered to be degraded and not in compliance with the fire protection plan. Since several fire areas were affected, a Phase 3 evaluation was required. A regional Senior Reactor Analyst performed a Phase 3 evaluation of this performance deficiency under the Significance Determination Process. Based upon the results of this evaluation, the performance deficiency was characterized as of very low safety significance (Green). The dominant accident sequence(s) involved a hypothetical fire of one circuit breaker in either the 3A or B 4160 VAC Engineered Safeguards Compartment that could have been suppressed prior to cable damage by manual suppression, had the isolation valve been in the correct position. This was followed by an independent failure of the safe shutdown train that was unaffected by the fire. Thus, core damage ensued. Major assumptions included that the fire service isolation valve could not be recovered, no credible ignition source was present on the 164 elevation of the control complex that would require evacuation of the Main Control Room and a train of mitigation equipment's failure probability was on the order of 1 in 100. The exposure time used for the evaluation was 30 days. The licensee entered this issue in the CAP as NCR 266866.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee personnel:

J. Holt, Plant General Manager  
W. Brewer, Manager, Maintenance  
S. Cahill, Manager, Engineering  
P. Dixon, Manager, Nuclear Assessment  
J. Franke, Director of Site Operations  
R. Hons, Manager Training  
C. Morris, Manager, Operations  
D. Westcott, Supervisor, Licensing  
M. Rigsby, Superintendent, Radiation Protection  
J. Stephenson, Supervisor, Emergency Preparedness  
I. Wilson, Manager Outage and Scheduling  
D. Young, Vice President, Crystal River Nuclear Plant

#### NRC personnel:

M. Sykes, Chief, Branch 3, Division of Reactor Projects

### **LIST OF ITEMS OPENED, CLOSED AND DISCUSSED**

#### Discussed

05000302/2515/176    TI    Emergency Diesel Generator Technical  
Specification Requirements Regarding  
Endurance and Margin Testing

### **LIST OF DOCUMENTS REVIEWED**

#### **Section 1R05: Fire Protection**

#### Procedures

AI-2205A, Pre Fire Plan – Control Complex  
AI-2205F, Pre Fire Plan – Miscellaneous Buildings And Components  
AI-2205C, Pre Fire Plan – Auxiliary Building  
SP-804, Surveillance of Plant Fire Brigade Equipment

## **Section 1R07: Heat Sink Performance**

### Programs and Procedures

AI-612, Temporary Stopgap Measures for Leaks in ASME Section XI Code Class 3 and non-ASME Section XI Code Piping, Rev 3  
 SP-340D, RWP-3B, DCP-1B and Valve Surveillance, Rev 41  
 SP-340A, RWP-3A, DCP-1A and Valve Surveillance, Rev 59  
 OP-103B, Plant Operating Curves, Rev 39  
 PT-501, Intake Canal Survey," Rev 4  
 SPP-300, Operating Daily Surveillance Log, Rev 211  
 Crystal River Unit 3 ASME Section XI Inservice Testing Program Pump and Valve Manual, Rev 21  
 Crystal River Unit #3 ASME Section XI Inservice Inspection Program, Rev 5  
 SP-306, Routine Surveillance Log, Enclosure 16, Annual EOP/AP Tool Box Inventory (AB/CC), EOB-12, 95' AB SW Room, 6/8/08

### Calculations

PGT-2004-1114, Crystal River Unit 3 Nuclear Services Closed Cycle Cooling Heat Exchangers Thermal Performance Test Data Evaluation and Uncertainty Analysis, Rev 0  
 PGT-2005-1123, Crystal River Unit 3 Decay Heat Closed Cycle Cooling Heat Exchangers DCHE-1A Thermal Performance Test Data Evaluation and Uncertainty Analysis, Rev 0

### Corrective Action Documents

\* 00292630, NRC UHS inspection identified documentation deficiencies, 8/20/2008  
 00214165, Unplanned entry into ITS, 11/20/2006  
 00210023, RWSP-1B, 10/20/2006  
 00286252, SWHE-1D Blockage >80%, 7/7/08

### Other

Enhanced Design Basis Document for the Nuclear Services and Decay Heat Sea Water System, Rev 13  
 "Single Tube Testing on the DCHE Exchanger at FPC's Crystal River-3 Plant," Nov 4, 1994  
 "Single Tube Testing on the SWHE Exchanger at FPC's Crystal River-3 Plant," Nov 17, 1994  
 Nuclear Service Closed Cycle Cooling (SW) Health Report, January to June, 2008  
 Decay Heat Closed Cycle Cooling (DC) Health Report, January to June, 2008  
 Assessment Number 259650, NGG Service Water System, 6/16/08-1/16/09  
 Crystal River Unit 3 Service Water Heat Exchanger (SWHE-1A) Eddy Current Examination Report, Jan 26, 2007  
 RW Flume Cleanings and the Impact on RWP-1 Discharge Pressure Graph, 8/18/2008  
 Documentation of UAf Meter and SWHE/DCHE Performance Monitoring from the GL 89-13 Program Manual  
 FPC Drawing Number SC-426-203, Nuclear Service Water Underground Piping Anchor Blocks, Rev1  
 Drawing FD-302-611, Nuclear Services and Decay Heat Sea Water, ISI and Original Design Basis Code Classes, FSAR Fig 9-7, Rev 96  
 Final Safety Analysis Report, Auxiliary and Emergency Systems, Chapter 9, Section 9.5 Cooling Water Systems, Rev 29  
 Plant Technical Specifications Bases, B 3.7.9, Nuclear Services Seawater System

Final Safety Analysis Report, Fig 2-61, Hurricane Blowout Conditions in Intake Canal, Rev 27.1

Work Order Package 01328525 01, Pick/Clean or/and Shoot and Clean on SWHE-1D, 7/7/08

Work Order Package 01336432 01, Nuclear Service Heat Exchanger SWHE-1C Pick and Clean Perform Shoot and Clean if Required, 7/8/08

\* Corrective action documents created as a result of this inspection

### **Section 1R12: Maintenance Effectiveness**

#### Nuclear Condition Reports

NCR 258587, A RPS channel trip

#### Maintenance Work Orders

1370333 Repair SWP-1A Shaft Seal Leakage  
1069311, C RPS power supply replacement

### **Section 1R20: Refueling and Other Outage Activities**

#### Procedures

SP-324, Containment Inspection

WCP-103, Station Readiness for Reduced Inventory, Mode 4/3 Entry and Mode 2/1 Entry

### **Section 40A2: Problem Identification and Resolution**

#### Nuclear Condition Reports

NCR 257775, FWP-2A may re-latch following trip  
NCR 247694, ICS control stations resulting in power changes  
NCR261244, AULD SASS Alarms present MCR distraction

### **Section 40A3: Event Follow-up**

#### Procedures

OP-202, Plant Heat Up  
OP-204, Power Operations  
AI-704, Reactor Trip Review and Analysis