



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
61 FORSYTH STREET, SW, SUITE 23T85  
ATLANTA, GEORGIA 30303-8931

July 25, 2006

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

SUBJECT: CRYSTAL RIVER UNIT 3 - NRC INTEGRATED INSPECTION REPORT  
05000302/2006003

Dear Mr. Young:

On June 30, 2006, 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 July 10, 2006, with you and members of your staff.

The inspection examined activities conducted under your license as they relate 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.

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 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/

Joel T. Munday, Chief  
Reactor Projects Branch 3  
Division of Reactor Projects

Docket No.: 50-302  
License No.: DPR-72  
Enclosure: Inspection Report 05000302/2006003  
w/Attachment: Supplemental Information

cc w/encl: (See page 2)

July 25, 2006

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

SUBJECT: CRYSTAL RIVER UNIT 3 - NRC INTEGRATED INSPECTION REPORT  
05000302/2006003

Dear Mr. Young:

On June 30, 2006, 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 July 10, 2006, with you and members of your staff.

The inspection examined activities conducted under your license as they relate 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.

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 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/

Joel T. Munday, Chief  
Reactor Projects Branch 3  
Division of Reactor Projects

Docket No.: 50-302  
License No.: DPR-72  
Enclosure: Inspection Report 05000302/2006003  
w/Attachment: Supplemental Information

cc w/encl: (See page 2)

PUBLICLY AVAILABLE

NON-PUBLICLY AVAILABLE

SENSITIVE

NON-SENSITIVE

ADAMS:  Yes ACCESSION NUMBER: \_\_\_\_\_

OFFICE	RII:DRP	RII:DRP	RII:DRP				
SIGNATURE	SON	TXM1	RJR1				
NAME	SNinh:aws	TMorrissey	RReyes				
DATE	07/24/2006	07/25/2006	07/2/2006	7/ /2006	7/ /2006	7/ /2006	7/ /2006
E-MAIL COPY?	YES	NO	YES	NO	YES	NO	YES

OFFICIAL RECORD COPY

DOCUMENT NAME: E:\Filenet\ML062070251.wpd

cc w/encl:

Daniel L. Roderick  
Director Site Operations  
Crystal River Nuclear Plant (NA2C)  
Electronic Mail Distribution

Chairman  
Board of County Commissioners  
Citrus County  
110 N. Apopka Avenue  
Inverness, FL 36250

Jon A. Franke  
Plant General Manager  
Crystal River Nuclear Plant (NA2C)  
Electronic Mail Distribution

Jim Mallay  
Framatome Technologies  
Electronic Mail Distribution

Terry D. Hobbs  
Manager Nuclear Assessment  
Crystal River Nuclear Plant (NA2C)  
Electronic Mail Distribution

Distribution w/encl: (See page 3)

Michael J. Annacone  
Engineering Manager  
Crystal River Nuclear Plant (NA2C)  
Electronic Mail Distribution

R. Alexander Glenn  
Associate General Counsel (MAC - BT15A)  
Florida Power Corporation  
Electronic Mail Distribution

Steven R. Carr  
Associate General Counsel - Legal Dept.  
Progress Energy Service Company, LLC  
Electronic Mail Distribution

Attorney General  
Department of Legal Affairs  
The Capitol  
Tallahassee, FL 32304

William A. Passetti  
Bureau of Radiation Control  
Department of Health  
Electronic Mail Distribution

Craig Fugate, Director  
Division of Emergency Preparedness  
Department of Community Affairs  
Electronic Mail Distribution

FPC

3

Report to Dale E. Young from Joel T. Munday dated July 25, 2006.

SUBJECT: CRYSTAL RIVER UNIT 3 - NRC INTEGRATED INSPECTION REPORT  
05000302/2006003

Distribution w/encl:

B. Mozafari, NRR  
L. Slack, RII EICS  
RIDSNRRDIPMLIPB  
PUBLIC

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 50-302

License No.: DPR-72

Report No: 05000302/2006003

Licensee: Progress Energy Florida (Florida Power Corporation)

Facility Crystal River Unit 3

Location: 15760 West Power Line Street  
Crystal River, FL 34428-6708

Dates: April 1, 2006 - June 30, 2006

Inspectors: T. Morrissey, Senior Resident Inspector  
R. Reyes, Resident Inspector

Approved by: Joel T. Munday, Chief  
Reactor Projects Branch 3  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000302/2006-003; 04/01/2006 - 06/30/2006; Crystal River Unit 3; Routine Integrated Report.

The report covered a three month period of inspection by the resident inspectors. No findings of significance were identified. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

None

B. Licensee-identified Violations

None

Enclosure

## REPORT DETAILS

### Summary of Plant Status:

Crystal River Unit 3 operated at essentially full power during the inspection period.

### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity [R]

#### 1R01 Adverse Weather Protection

##### .1 Seasonal Susceptibility: Hurricane Preparation

###### a. Inspection Scope

The inspectors reviewed the licensee's hurricane season preparations using the licensee's Emergency Management Procedure EM-220, Violent Weather. The inspectors checked that the licensee maintained the ability to protect vital systems and components from high winds and flooding associated with hurricanes. Additionally, the inspectors toured the six plant areas listed below to check for any vulnerabilities, such as inadequate sealing of water tight penetrations or degraded barriers that could affect the associated systems. The inspectors verified that the licensee's violent weather committee had been established and that an initial preparatory walkdown had been completed. Nuclear condition reports (NCRs) were reviewed to verify that the licensee was identifying and correcting adverse weather protection issues.

- A and B emergency diesel generator rooms
- Control complex flood walls and doors
- Emergency feedwater pump EFP-3 building
- South berm area and intake canal area
- Equipment hatch missile shield area
- Sea water room

###### b. Findings

No findings of significance were identified.

##### .2 Impending Adverse Weather: Tropical Storm Alberto

###### g. Inspection Scope

On June 12 and 13, the inspectors reviewed the licensee's hurricane preparations for Tropical Storm Alberto which had entered the Gulf of Mexico. The licensee implemented Emergency Management Procedure EM-220, Violent Weather, for the hurricane warning. The inspectors checked that the licensee maintained the ability to protect vital systems and components from high winds and flooding associated with the storm. The inspectors toured the six plant areas listed below to check for any vulnerabilities, such as inadequate sealing of water tight penetrations or degraded

Enclosure

barriers, that could affect systems important to safety. The inspectors verified that the licensee's violent weather committee had been established and that actions required by procedure EM-220 were completed. The inspectors monitored control room activities and attended violent weather committee meetings.

- Emergency feedwater pump EFP-3 building
- North berm area and intake canal area
- Sea water room
- Alternate AC emergency diesel generator building
- Makeup pump areas
- A and B emergency diesel generators

b. Findings

No findings of significance were identified. Winds above that of a tropical storm were not experienced on-site.

1R04 Equipment Alignment

Partial System 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:

- C April 5, train A emergency core cooling system (raw water (RW), decay heat closed cycle cooling (DC), decay heat removal (DHR), and building spray (BS) systems) using operating procedures OP-408, nuclear services cooling system, OP-404 Decay Heat Removal System, and OP-405, Reactor Building Spray, while raw water pumps RWP-2B, RWP-3B, and RWP-1 were out of service for maintenance.
- C April 18 and 20, high head injection make-up system, using OP-402, Makeup and Purification System, while make-up pump MUP-1A was out of service for planned maintenance.
- C May 1 - 5, emergency diesel generator EGDG-1A using OP-707, Operation of the Engineered Safeguards Diesel Generator and EGDG-1C, using OP 707C, Operation of the Alternate AC Diesel Generator, while EGDG-1B was out of service during a planned extended maintenance outage.

- C May 22 - 26, train A RW and nuclear service water (SW) systems, using Operating Procedure OP-408, Nuclear Services Cooling System, and Emergency Diesel Generator EGDG-1B using OP-707, Operation of the Engineered Safeguards Diesel Generator, while EGDG-1A was out of service during a planned extended maintenance outage.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Fire Protection 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 Final Safety Analysis Report (FSAR) Section 9.8, Plant Fire Protection Program, were met. Documents reviewed are listed in the attachment. The inspectors toured the following nine areas important to reactor safety:

- Emergency feed pump EFP-3 building
- Auxiliary building 95' seawater room
- Make-up pump rooms and valve alley
- EGDG-1A rooms
- EGDG-1C building, fuel tank, and 4160/12kV transformer area
- A and B control complex chillers, B RW and SW system area, and EGDG-1B engine room.
- Spent fuel pool area
- Fire service pump building
- Emergency feedwater initiation and control rooms

b. Findings

No findings of significance were identified.

.2 Annual Inspection

a. Inspection Scope

On April 7, the inspectors observed the licensee fire brigade response to an announced simulated fire in the control complex chiller area (163' Elevation control building). The inspectors checked the brigade's communications, ability to set-up and execute fire operations, and their use of fire fighting equipment. The inspectors verified compensatory actions were in place to ensure that additional alarms which may be received during the drill were addressed. Additionally, the inspectors verified the licensee considered the aspects as described below when the brigade conducted the firefighting activities and during the post-drill critique. The inspectors attended the post-drill critique to check that the licensee's drill acceptance criteria were met and that any discrepancies were discussed and resolved. Administrative Instruction AI-2205, Administration of CR-3 Fire Brigade Organization and Duties of the Fire Brigade, and the fire drill evaluation report were reviewed to assure that acceptance criteria were evaluated and deficiencies were documented and corrected. In addition, the inspectors reviewed the storage, training, expectations for use and maintenance associated with the self-contained breathing apparatus (SCBA) program. Items reviewed are listed in the attachment. Specific attributes inspected included:

- The brigade, including the fire team leader, had a minimum of five members.
- Members set out designated protective clothing and properly donned gear.
- SCBA were available and properly used.
- Control room personal verified fire location, dispatched fire brigade and sounded alarms. Emergency action levels were declared and notifications made.
- Fire brigade leader as well as the control room senior reactor operator had copies of the pre-fire plans.
- Brigade leader maintained control. Members were briefed, discussed plan of attack, received individual assignments, and completed communications checks. Plan of attack discussions were consistent with pre-fire plans.
- Fire brigade arrived at the fire scene in a timely manner, taking the appropriate access route specified in the strategies and procedures
- Control and command was set up near the fire scene and communications were established with the control room and the fire brigade members.
- Effectiveness of radio communication between the command post, control room, plant operators and fire brigade members.
- Fire hose lines reached all necessary fire hazard locations, were laid out without flow constrictions, and were simulated as being charged with water.
- The fire area was entered in a controlled manner following the two person rule.
- The fire brigade brought sufficient fire-fighting equipment to the scene to properly perform its fire-fighting duties.
- The fire brigade checked for fire victims and fire propagation into other areas.
- Effective smoke removal operations were simulated in accordance with the pre-fire plan.
- The fire-fighting pre-fire plan strategies were utilized.
- The drill scenario was followed, and the drill acceptance criteria were met.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

.1 Internal Flooding

a. Inspection Scope

The inspectors reviewed the Crystal River Unit 3, FSAR, Chapter 2.4.2.4, Facilities Required for Flood Protection, that depicted protection for areas containing safety-related equipment to identify areas that may be affected by internal flooding. A walkdown of the auxiliary building vault containing A train DHR and BS pumps was conducted to ensure that flood protection measures were in accordance with design specifications. Specific plant attributes that were checked included structural integrity, sealing of penetrations, and operability of sump systems. The inspectors reviewed WO 409398 associated with the A train decay heat pit sump level transmitter calibration to verify the calibration was current.

b. Findings

No findings of significance were identified.

.2 External Flood Protection

a. Inspection Scope

The inspectors performed an inspection of the external flood protection features for Crystal River, Unit 3. The inspectors reviewed the FSAR, Chapter 2.4.2.4, Facilities Required for Flood Protection, that depicted the design flood levels and protection for areas containing safety-related equipment to identify areas that may be affected by external flooding. The inspectors conducted a general site walkdown of all external areas of the plant including the turbine building, auxiliary building, and berm to ensure that flood protection measures were erected in accordance with design specifications. Emergency Procedure EM-220, Violent Weather, was checked to verify that adequate measures were established to protect against external flooding due to hurricanes. Specific plant attributes that were checked included structural integrity, sealing of penetrations below the design flood line, and adequacy of watertight doors between flood areas. The inspectors also reviewed work order package 687544, which documented inspections and preventative maintenance activities on the watertight doors and flood gates. The inspectors verified specific activities had been completed which protected against flooding or water entering the EGDG fuel-oil tanks, emergency feed pump EFP-3 building, and the emergency feed tank EFT-2 building.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

Annual Review

a. Inspection Scope

The inspectors observed maintenance personnel perform heat exchanger inspections and operability assessments for the two listed heat exchangers. The inspectors were present when the heat exchangers were opened to observe tube side as-found fouling conditions to verify the heat exchangers were in a condition to perform their design functions. The inspectors verified that the heat exchanger inspections and cleaning were performed in accordance with preventative maintenance procedure, PM-275, General Preventative Maintenance Work. The inspectors verified the assessment of the SW heat exchanger was performed utilizing OP-103B, Plant Operating Curves.

- Work order 783732, DC Heat Exchanger DCHE-1B
- Work order 844188, SW Heat Exchanger SWHE-1D

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

Observed Simulator Evaluated Session

a. Inspection Scope

On May 2, the inspectors observed licensed operators response and actions for the Crystal River Unit 3 Simulator Evaluated Session, SES-02. In addition to responding to a loss of a makeup pump and an integrated control system (ICS) instrument failure, the session required the crew to use plant emergency operating procedures (EOPs) to respond to a steam generator tube rupture and an inadequate subcooling margin. Later in the scenario, the Emergency Plan was entered and the licensee declared an Alert and simulated activation of the technical support center. The EOPs entered included EOP-2, Vital System Status Verification, EOP-03, Inadequate Subcooling Margin and EOP-6, Steam Generator Tube Rupture. The inspection focused on high-risk operator actions performed during implementation of the emergency operating procedures; emergency plan implementation using emergency management procedure EM-202, Duties of the Emergency Coordinator; and the incorporation of lessons learned from previous plant events and simulator sessions. Through observations of the critique conducted by training instructors and plant management following the session, the inspectors

assessed whether appropriate feedback was provided to the licensed operators regarding any identified weaknesses.

The inspectors specifically evaluated the following attributes related to operating crew performance:

- Clarity and formality of communication including crew briefings
- Ability to take timely action to safely control the unit
- Prioritization, interpretation, and verification of alarms
- Implementation of EOPs
- Control board operation and manipulation, including operator actions
- Oversight and direction provided by supervision, including ability to identify and notify state authorities within the 15 minute requirement
- Effectiveness of the training oversight, evaluation, and critique

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. This 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, the inspectors verified that reliability and unavailability were properly monitored, and that 10 CFR 50.65 (a)(1) and (a)(2) classifications were justified in light of the reviewed degraded equipment condition. In addition, the inspectors attended the Maintenance Rule Expert Panel Meeting on April 25. The inspectors conducted this inspection for the two degraded equipment conditions associated with the items listed below.

- C Nuclear SW System:
  - NCR 190520, Increased Service Water Leakage Found to be in SWHE-1D
  - NCR 186661, Service Water System Exceeded MR Functional Failure Limit
- C Radiation Monitoring (RM) System
  - NCR 16958, Atmospheric RM System Exceeded MR Functional Failure Limit

b. Findings

No findings of significance were identified.

**1R13 Maintenance Risk Assessments and Emergent Work Evaluation****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 seven work week assessments.

- C Work Week 06W13, Risk Assessment for operation in risk condition yellow due to B train raw water system out of service for planned maintenance.
- C Work Week 06W15, Risk Assessment for operation with MUP-1A out of service for planned maintenance.
- C Work Week 06W17, Risk Assessment for operation with EGDG-1B out of service for planned maintenance.
- C Work Week 06W20, Risk Assessment for operation with EGDG-1A out of service for planned maintenance.
- C Work Week 06W23, Risk Assessment for operation in condition yellow due to Units 2 and 4 being off-line causing Unit 3 to enter administrative instruction AI-500, Appendix 7, Grid Contingency.
- C Work Week 06W24, Risk Assessment for operation with emergency feed pump EFP-3 unavailable, and emergent work requiring maintenance on the intake motor control centers MCC 3A and 3B.
- C Work Week 06W25, Risk Assessment for operation with an unavailable D vital bus inverter and emergent work when the B emergency service transformer and the start-up transformer feeder breakers opened during trouble shooting of the B vital battery ground.

**b. Findings**

No findings of significance were identified. However, the inspectors identified a negative trend associated with the licensee's on-line risk assessments, described in section 4OA2.3.

**1R15 Operability Evaluations****a. Inspection Scope**

The inspectors reviewed the following six NCRs to verify that the 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 monitored licensee 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 150805, IST Program Fast Stroking AOV's
- NCR 189364, Diesel Fuel Oil Post-Offload Testing Criteria Not Met
- NCR 192036, EGDG Air Receiver Tank Check Valve EGV-23 Failed SP-370
- NCR 194898, Make Up Valve MUV-26 Position Indication Problem
- NCR 195354, EGDG-1A Lower Vertical Drive Backlash Out of Tolerance
- NCR 192837, EGDG-1C Generator Bearing Oil Contains Iron Particulate

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed the one engineering change package listed below to verify it met the requirements of engineering procedures EGR-NGGC-0003, Design Review Requirements and EGR-NGGC-0005, Engineering Change. The design change was evaluated for potential adverse effects on safety-related systems. This modification installed a non-safety alternate AC diesel generator (EGDG-1C) that can be aligned to power either the non-safety feedwater pump (FWP-7) or one 4160 V ES bus in the event of a loss of the normal power supplies. Improved Technical Specifications (ITS) permits a longer allowed outage time for an ES EGDG as long as an alternate AC diesel generator is available to power non-accident condition safe shutdown loads within one hour. The inspectors reviewed the timing associated with energizing safe shutdown loads from EGDG-1C to verify that the required actions could be completed within an hour. The inspectors observed the as-built configuration of the modification and verified it was installed in accordance with the engineering change package. The inspectors also observed a quarterly EGDG-1C surveillance test as documented in section 1R22. Documents reviewed included surveillance procedures, design and implementation packages, work orders, system drawings, corrective action documents, applicable sections of the FSAR, Technical Specifications, and design basis information. Post installation testing data and acceptance criteria was reviewed. The inspectors verified that issues found during the course of the installation and testing associated with the modification were entered and properly dispositioned in the corrective action program.

- EC 55315, Alternate AC Diesel Generator

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. 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 seven post-maintenance tests reviewed are listed below:

- SP-344B, RWP-2B, SWP-1B and Valve Surveillance, after performing planned maintenance on RWP-2B per WO 664576
- MP-299, Heat Exchanger Tube Plugging and Tube Removal / Replacement, after performing planned maintenance on SW Heat Exchanger SWHE-1D per WO 844188
- WO's 729309 and 752251, Refurbish and Replace Breaker MTSW-2D-3A9 MUP 1B (A feeder)
- SP-340C, MUP-1A, MUP-1B, And Valve Surveillance, after performing planned maintenance on MUP-1A per WO 812276
- SP-132A, Engineered Safeguards Channel 1 Calibration, after replacing power supplies and relays per WO 864007
- SP-354B, Monthly Functional Test Of The Emergency Diesel Generator EGDG-1B, after performing the two year engine maintenance inspection per WO 522661
- SP-354A, Monthly Functional Test Of The Emergency Diesel Generator EGDG-1A, after performing the two year engine maintenance inspection, per WO 821560

b. Findings

No findings of significance were identified.

**1R22 Surveillance Testing****a. Inspection Scope**

The inspectors observed and/or reviewed the 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. The following seven activities were observed/reviewed:

**In-Service Test:**

- SP-344B, RWP-2B, SWP-1B And Valve Surveillance (SWP-1B only)
- SP-340B, DHP-1A, BSP-1S and Valve Surveillance

**Surveillance Tests:**

- SP-358A, Operations ES Monthly Automatic Actuation Logic Functional Test #1
- SP-354C, Functional Test of the Alternate AC Diesel Generator EGDG-1C
- SP-333, Control Rod Exercises
- SP-349C, EFP-3 And Valve Surveillance

**RCS Leak Detection Test:**

- SP-317 RC System Water Inventory Balance

**b. Findings**

No findings of significance were identified.

**1R23 Temporary Plant Modifications****a. Inspection Scope**

The inspectors evaluated one temporary modification 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-0005, Engineering Change, to assess if the modification was properly developed and implemented. Through field inspections, the inspectors verified that the correct lead had been lifted.

- EC 63710RO, Temporarily Lift Lead For 25% Position Indication For CRD 1-6

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors checked licensee submittals for the PIs listed below for the period January 1, 2004 through December 31, 2005 to verify the accuracy of the PI data reported during that period. Performance indicator definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Rev. 3, were used to check the reporting for each data element. The inspector checked licensee event reports (LERs), operator logs, daily plant status reports, and performance indicator data sheets to verify the licensee accurately reported the data including the number of critical hours reported. 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 CAP and appropriately resolved.

- Unplanned Scrams per 7000 Critical Hours
- Scrams with Loss of Normal Heat Removal
- Unplanned Power Changes per 7000 Critical Hours

b. Findings

No findings of significance were identified.

4OA2 Problem Identification and Resolution

.1 Daily Screening of Items Entered Into the Corrective Action Program

a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive 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

a. Inspection Scope

The inspectors selected NCR 131522, Service Water Heat Exchanger Technical Specification Requirements not Consistent with Safety Analysis, for a detailed review and discussion with the licensee. The Improved Technical Specification (ITS) for the SW system allows operation for up to 72 hours with only two SW heat exchangers in service. In July 2004, NCR 131522 documented that the SW system safety analysis did not support operation with only two SW heat exchangers in service under elevated ultimate heat sink temperatures. Under these conditions, two heat exchangers would not be able to provide the design basis heat transfer capability during a postulated accident event. Administrative controls were added to the SW operating procedures to preclude operating with less than three SW heat exchangers. The inspectors reviewed the administrative procedure controls in place to verify they were adequate to ensure the SW system would continue to be operated within the design basis. The inspectors checked that the issue had been completely and accurately identified in the licensee's CAP, and that safety concerns were properly classified and prioritized for resolution, apparent cause determinations were sufficiently thorough, and appropriate corrective actions were implemented in a manner consistent with safety and compliance with plant technical specifications and 10 CFR 50. The inspectors also evaluated the NCR using the requirements of the licensee's CAP as delineated in Corrective Action procedure CAP-NGGC-200, Corrective Action Program.

b. Findings and Observations

No findings of significance were identified. The inspectors determined that the review of the safety analysis calculation and the processing of an ITS amendment were delayed several times. However, a licensee review of SW system operation over the last five years determined that the system had not been operated outside its design basis. Adequate administrative controls were implemented when the issue was first identified to preclude operation with less than three service water heat exchangers. Although the calculation review and processing of an ITS amendment were not timely, no violation of regulatory requirements occurred since the system had not been operated outside its design basis. The licensee is preparing the necessary ITS amendment. Corrective actions addressing the lack of timeliness in the calculation review and processing an ITS amendment are documented in NCRs 190094 and 191684.

.3 Semi-Annual Trend Review

a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," the inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screening discussed in section 4OA2.1 above, plant status reviews, plant tours, and licensee trending efforts. The inspectors review nominally considered the six month period of January 2006 through June 2006. The review also included issues documented in the Equipment Performance Priority List dated June 16, 2006; the System Health Report dated May 2006, various nuclear assessment section reports, and various maintenance rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's 1<sup>st</sup> Quarter 2006, Site CAP Rollup & Trend Analysis report. Corrective actions associated with a sample of the issues identified in the licensees trend report were reviewed for adequacy.

b. Assessment and Observations

No findings of significance were identified. The inspectors in reviewing licensee performance over the last six months, noted one negative trend, discussed below.

A negative trend in the number of issues associated with the implementation of the licensee's on-line risk assessment in accordance with 10CFR 50.65 a(4) was identified. Over the last six months, there have been several on-line risk assessments (utilizing Equipment Out of Service (EOOS) model) that did not properly reflect planned or delayed maintenance activities. Several examples were found where EOOS was not updated to reflect schedule delays in completing work/testing activities (switchyard work, pressurizer heater breaker replacement and a RW system PMT). In another example, the risk assessment listed a switchyard work activity, however, the EOOS calculation was not updated to include the factor of 5 loss of offsite power risk factor. Other examples include the risk assessment not reflecting: the inoperability of EFP-3 during a monthly preventative maintenance activity (two instances) and not including a monthly EGDG surveillance.

For all examples above, except for one, when updated the on-line risk remained green and no additional risk mitigating actions were required. The one exception was associated with the delayed performance of a RW system PMT in April 2006. This PMT was scheduled and reflected in the risk assessment as being complete prior to performing a surveillance that caused an EGDG to be unavailable. However, both activities were actually completed at the same time without updating the risk assessment. When questioned by the inspectors, the licensee updated the risk assessment to reflect these parallel activities. The on-line risk was determined to be yellow which would have required additional risk mitigation actions. In September 2005, the licensee determined that due to design differences between the RW pumps,

operation of RW pump RWP-2B resulted in an elevated risk. Corrective actions were implemented to ensure future on-line risk assessments reflected RW system configuration and to make operations and scheduling personnel aware of the issue. Subsequent to this event, the on-line risk assessment software model was revised to include the new alternate AC diesel generator that was installed and available in February 2006. Using this new risk model, the risk assessment associated with operating RWP-2B with an unavailable EGDG is green. Since the actual risk would have remained green, the inspectors determined that the failure to properly assess and manage risk in accordance with 10CFR 50.65 a(4) is a minor violation of regulatory requirements. The licensee performed a formal root cause investigation that also included the other on-line risk assessment performance issues noted above (NCR 190340). NCRs associated with the examples noted above are listed in the attachment.

4OA6 Meetings

Exit Meeting Summary

On July 10, 2006, the resident inspectors presented the inspection results to Mr. D. Young, Site Vice President and other members of licensee management, who acknowledged the findings. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

M. Annacone, Manager, Engineering  
W. Brewer, Manager, Maintenance  
R. Hons, Manager, Training  
J. Franke, Plant General Manager  
J. Hays, Manager, Outage and Scheduling  
J. Holt, Manager, Operations  
P. Infanger, Supervisor, Licensing  
M. Rigsby, Superintendent, Radiation Protection  
D. Roderick, Director Site Operations  
J. Stephenson, Supervisor, Emergency Preparedness  
T. Hobbs, Manager, Nuclear Assessment  
D. Young, Vice President, Crystal River Nuclear Plant

#### NRC personnel:

J. Munday, Chief, Reactor Projects Branch 3, NRC Region II

## LIST OF DOCUMENTS REVIEWED

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

#### Procedures

AI-2205A, Pre Fire Plan - Control Complex  
AI-2205C, Pre Fire Plan - Auxiliary Building  
AI-2205F, Pre Fire Plan - Miscellaneous Buildings and Components  
HPP-502, Respiratory Equipment Inspection and Maintenance  
SP-804, Surveillance of Plant Fire Brigade Equipment

#### Other

SCBA Monthly Inspection Database  
MSA SCBA lesson plans (ST0032P, ST0032 and ST0032A)

### **Section 4OA2.3: Problem Identification and Resolution**

#### Nuclear Condition Reports

181917	EGDG-1A surveillance not in EOOS
182902	EOOS plot not identifying switchyard work X5 factor
183365	Brookridge line maintenance not in work week assessment
183920	Surveillance procedures not consistently reflected in EOOS
187888	Changing schedule resulted in EOOS not being accurate
189807	Clearance Boundaries not in EOOS
190340	Plant risk condition inadvertently placed in yellow
195080	Surveillance list incomplete for maintenance rule unavailability impacted EOOS
196647	Low sensitivity for EOOS during removal of EFIC channel