UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

October 29, 2009

Mr. Jon A. Franke, 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 05000302/2009004

Dear Mr. Franke:

On September 30, 2009, the US Nuclear Regulatory Commission (NRC) completed an inspection at your Crystal River Unit 3. The enclosed inspection report documents the inspection findings, which were discussed on October 13, 2009, with you 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, one finding of very low safety significance (Green) was identified. The finding was determined to involve a violation of NRC requirements. However, because of the very low safety significance of the issue and because it was entered into your corrective action program, the NRC is treating the issue as non-cited violation (NCV) consistent with Section VI.A of the NRC Enforcement Policy. If you contest the NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Administrator, Commission, Washington DC 20555-0001; and the NRC Resident Inspector at the Crystal River Unit 3 site. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection, with the basis for your disagreement, to the Regional administrator, Region II, and the NRC Resident Inspector at Crystal River Unit 3. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

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 05000302/2009004
w/Attachment: Supplemental Information

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Letter to Jon A. Franke from Marvin D. Sykes dated October 29, 2009

SUBJECT: CRYSTAL RIVER UNIT 3 – NRC INTEGRATED INSPECTION REPORT 05000302/2009004

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	50-302
License No.:	DPR-72
Report No.:	05000302/2009004
Licensee:	Progress Energy (Florida Power Corporation)
Facility:	Crystal River Unit 3
Location:	Crystal River, FL
Dates:	July 1, 2009 – September 30, 2009
Inspectors:	T. Morrissey, Senior Resident Inspector R. Reyes, Resident Inspector J. Hamman, Project Engineer J. Heath, Project Engineer R. Chou, Reactor Inspector R. Carrion, Senior Reactor Inspector
Approved by:	M. Sykes, Chief, Reactor Projects Branch 3 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000302/2009004; 07/01/2009-09/30/2009; Crystal River Unit 3; Maintenance Risk Assessments and Emergent Work Control.

The report covered a three month period of inspection by resident inspectors, two region based project engineers and two region based reactor inspectors. One Green finding was identified. The significance of most findings is identified by the color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. 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. NRC Identified & Self-Revealing Findings

Green. The inspectors identified a non-cited violation (NCV) of 10 CFR 50.65(a)(4) for the failure to perform adequate risk assessments associated with a number of surveillance tests. Specifically, it was determined that risk assessments were not being properly performed for equipment that became unavailable as a result of surveillance testing. This condition has existed since implementation of the Equipment out of Service (EOOS) risk assessment software more than 10 years ago. Short term corrective actions include performance of additional peer reviews of upcoming performance and surveillance tests (PTs and SPs) to ensure they are included in the plant risk assessment and a similar independent review by the corporate probabilistic risk assessment staff. Long term corrective actions include: screen all SPs and PTs to evaluate for risk impact; develop a methodology to include risk significant SPs and PTs in the plant risk assessment, either automatically from the work schedule or a manual process; incorporate risk assessment process changes in licensee procedures; and provide additional EOOS training to the plant staff.

Utilizing IMC 0612, Appendix B, Issue Screening, the finding was determined to be more than minor since licensee risk assessments failed to consider risk significant systems and support systems that were unavailable during maintenance. In order to determine the risk significance of this finding, the inspectors selected two recently performed surveillance procedures for two high risk systems that were not included in the licensee's risk assessment. The SPs selected were decay heat system (DHR) SP-340B, DHP-1A, BSP-1A and Valve Surveillance and emergency feedwater (EFW) system SP-146A, EFIC Monthly Functional Test (During Modes 1, 2, 3). The risk deficit for SP-340B was determined to be less than 1E-6 incremental core damage probability deficit (ICDPD). The risk associated with SP-146A was not quantified since it was determined that the system did not lose its functionality during the SP. Utilizing IMC 0609, Appendix K, Maintenance Risk Assessment and Risk Management Significance Determination Process (SDP), Flow Chart 1, the finding was determined to be of very low safety significance. This finding was not assigned a cross cutting aspect since the issue existed for greater than 10 years and is not indicative of current licensee performance.

B. Licensee Identified Violations

None

REPORT DETAILS

Summary of Plant Status:

Crystal River 3 began the inspection period at 100 percent rated thermal power (RTP). On August 24 the unit was manually tripped after control rod group 7 dropped fully into the core. The control rod system was repaired and the unit was restarted on August 25 and obtained 100 percent RTP on August 27. On September 26 the unit was shutdown for a planned refueling outage. The unit remained shutdown for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment

.1 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 three partial system alignments in system walkdowns using the listed documents:

- B train raw water system (raw water pumps RWP-3B and RWP-2B) and B train decay heat closed cycle cooling (DC) system using OP-408, Nuclear Services Cooling System, while makeup pumps MUP-1A and MUP-1B were out of service for planned maintenance
- A train raw water system (raw water pumps RWP-3A and RWP-2A) and A train DC system using OP-408, Nuclear Services Cooling System, during a yellow risk condition due to B train high head safety injection being out of service for planned maintenance
- B train decay heat removal (DHR) and DC systems using OP-404, Decay Heat Removal System, and OP-408 after being restored from a planned B train emergency core cooling system (ECCS) outage

b. Findings

No findings of significance were identified.

.2 Complete Equipment Walkdown

a. Inspection Scope

The inspectors conducted a detailed walkdown/review of the alignment and condition of both trains of the DHR 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.

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
- Temporary scaffolding had been installed per station procedures
- Evidence of boric acid leakage

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 system health report (dated July to December 2008) and the DHR System Equipment Walkdown Summary report (dated July 06, 2009) were reviewed to ensure equipment issues identified were properly addressed in the corrective action program (CAP). This completes one sample of a complete system alignment.

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 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:

- Makeup pump MUP-1C cubical
- Auxiliary building 95' elevation hallway (engineer safeguard motor control cabinets area)
- Auxiliary building 162' elevation spent fuel pool area

- Auxiliary building sea water room
- Turbine building turbine deck operating floor

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

Internal Flood Protection

a. Inspection Scope

The Inspectors inspected manholes and bunkers listed below that are subject to flooding to verify cables were not submerged in water; cables were intact; and cable support structures were adequate to perform its function. The inspectors observed six manholes/bunkers that are subject to flooding that contain equipment important for the safe operation of the plant. The inspection was performed in conjunction with inspections associated with the NRC license renewal audit team who were on-site. Documents reviewed are listed in the attachment.

- Manhole E-1 (Location: hot machine shop; Circuits: circulating water pump (CWP) power cables (480 VAC) and intake systems control/alarm circuits)
- Manhole E-2 (Location: Southeast berm; Circuits: CWP power cables and intake systems control/alarm circuits)
- Manhole E-3 (Location: Southwest berm; Circuits: CWP power cables and intake systems control/alarm circuits)
- Manhole E-7 (Location: Intake; Circuits: CWP power cables and intake systems control/alarm circuits)
- Bunker SB-1 (Location: bridge east end discharge canal ; Circuits: ES DC control power for switchyard breakers)
- Bunker SB-2 (Location: bridge east end discharge canal ; Circuits: ES DC control power for switchyard breakers)

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

.1 Resident Inspector Quarterly Review

a. Inspection Scope

On July 14 the inspectors observed and assessed licensed operator crew response and actions for the Crystal River Unit 3 licensed operator simulator evaluated session SES-02A. Session SES-02A involved a damaged fuel assembly in the spent fuel pool, an integrated control system induced transient, a steam generator tube rupture and a main steam leak outside containment. The inspectors observed the operator's use of abnormal procedures; AP-504, Integrated Control System Failure; and

emergency operating procedures; EOP-02, Vital System Status Verification; and EOP-06, Steam Generator Tube Rupture. The operator's actions were verified to be in accordance with the above procedures. Event classification and notifications were verified to be in accordance with emergency management procedure EM-202, Duties of the Emergency Coordinator. The simulator instrumentation and controls were verified to closely parallel those in the actual control room. The inspectors evaluated the following attributes related to crew performance:

- 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 abnormal 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 Improved Technical Specification (ITS) actions, regulatory reporting requirements, and emergency plan classification and notification
- Crew overall performance and interactions

b. Findings

No findings of significance were identified.

.2 Resident Inspector Quarterly Review

a. Inspection Scope

On August 4 the inspectors observed and assessed licensed operator crew response and actions for the Crystal River Unit 3 licensed operator simulator evaluated session SES-16A. The session involved a turbine trip with an anticipated transient without scram (ATWS). During recovery of this transient, while progressing through emergency operating procedures, a steam generator tube rupture occurred in the A steam generator. Additionally, during reactor coolant system depressurization the power operated relief valve failed to close. The inspectors observed the operator's use of; EOP-02, Vital System Status Verification; and EOP-06, Steam Generator Tube Rupture. The operator's actions were verified to be in accordance with the above procedures. Event classification and notifications were verified to be in accordance with EM-202, Duties of the Emergency Coordinator. The simulator instrumentation and controls were verified to closely parallel those in the actual control room. The inspectors evaluated the following attributes related to crew performance:

- 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 abnormal 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 ITS 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 associated with 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 (MR) 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. The documents reviewed are listed in the attachment. The inspectors conducted this inspection for the following three equipment issues:

- NCR 333515, Loss of Emergency Service Motor Control Center 3B1; and system engineering report SE09-0020, MT System (auxiliary electric power) remaining in a(2)
- NCR 344628, Decay heat closed cycle cooling pump DCP-1B failure
- NCR 346331, Make-up valve MUV-3 failed to close

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 were adequate. 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 09W27, Operations with MUP-1A, MUP-1B, SWP-1C, and RWP-1 unavailable due to planned maintenance, and A channel reactor protection system out of service for emergent work
- Work Week 09W29, Operations in Yellow risk condition with MUP-1C, and makeup system valves MUV-25, 26, 58, and 62, unavailable due to planned maintenance
- Work Week 09W31, Operations in Yellow risk condition with A train ECCS (DHR, BS, RW and DC) unavailable due to planned maintenance
- Work Week 09W33, Operation with emergency diesel generator EGDG-1B out of service for testing, raw water pump RWP-2B operating as the duty pump, and control complex chiller CHHE-1B out of service for planned maintenance
- Work Week 09W36, Operation with raw water pump RWP-2B in operation, planned surveillance testing of the emergency feedwater initiation and control (EFIC) system, and emergency feedwater pump EFP-3
- Work Week 09W37, Operations in yellow risk condition with the B ECCS unavailable due to planned maintenance, and raw water pump RWP-2A operating as the duty pump

b. Findings

Introduction: The NRC inspectors identified a Green non-cited violation (NCV) of 10 CFR 50.65(a)(4) for the failure to perform adequate risk assessments associated with a number of surveillance tests. Specifically, it was determined that risk assessments were not being properly performed for equipment that became unavailable as a result of surveillance testing

Description: On July 7, 2003, during a review of the weekly risk assessment, the inspectors noted that the A channel reactor protection system (RPS) had not been added to the weekly risk assessment after the channel had been declared inoperable. The A channel of the RPS system had been declared inoperable during the performance of surveillance procedure SP-110A, “A” Channel Reactor Protection System Functional Testing, when a bistable was found to be out of tolerance. The inspectors questioned the licensee as to why the Equipment out of Service (EOOS) risk assessment had not been updated to include an inoperable RPS channel. The licensee had not addressed the impact of the inoperable channel of RPS on risk since it was believed that the RPS system was not included in the EOOS risk model. After further review, it was determined that the RPS system was modeled in EOOS and the risk assessment was updated with no change in plant risk. Since there was no change to plant risk, the failure to include the inoperable RPS channel in the EOOS risk assessment was determined to be a minor violation of 10 CFR 50.65(a)(4). Nuclear condition report (NCR) 344062 was initiated to document the issue.

As a result of the NCR 344062 investigation, the licensee determined that the risk associated with certain instrumentation systems undergoing surveillance testing had not been properly considered in the plant risk assessments. This condition has existed since the EOOS risk assessment software was implemented more than 10 years ago. The common understanding had been that instrumentation systems undergoing surveillance testing such as the RPS system have an assumed unavailability time already factored into the EOOS risk assessment. While this is true for the CR3 probabilistic risk assessment (PRA) model of record (MOR), it is not true

for the EOOS risk model. The EOOS risk model assumes 100 percent availability of all equipment. It is up to the end user to determine what components are out of service and to input those components into the EOOS program. The licensee initiated NCR 348904 to address the extent of condition to determine whether the same issue existed for other types of surveillance or performance tests.

The extent of condition investigation associated with NCR 348904 determined that EOOS risk assessments were incorrectly performed for surveillance and performance tests (PTs) for systems other than those associated with instrumentation systems. The licensee determined that the problem originated during the initial implementation of the EOOS risk assessment software when it was deployed to comply with 10 CFR 50.65(a)(4). The assumption was that the EOOS PRA model was similar to the PRA MOR as described above. This assumption continued until it was determined to be incorrect during this investigation. Short term corrective actions include performance of additional peer reviews of upcoming PTs and SPs to ensure they are included in the EOOS risk assessment and a similar independent review by the corporate PRA staff. Long term corrective actions include: screen all SPs and PTs to evaluate for risk impact; develop a methodology to include risk significant SPs and PTs in the EOOS risk assessment, either automatically from the work schedule or a manual process; incorporate risk assessment process changes in licensee procedures; and provide additional EOOS training to the plant staff.

Analysis: The inspectors determined that the licensee's failure to perform an adequate risk assessment when performing surveillance procedures is a performance deficiency. The finding is being treated as NRC identified since it was found during an extent of condition investigation of an NRC identified issue. Utilizing IMC 0612, Appendix B, Issue Screening, the finding was determined to be more than minor since licensee risk assessments failed to consider risk significant systems and support systems that were unavailable during maintenance. In order to determine the risk significance of this finding, the inspectors selected two recently performed surveillance procedures for two high risk systems that were not included in the licensee's risk assessment. The SPs selected were decay heat system (DHR) SP-340B, DHP-1A, BSP-1A and Valve Surveillance performed on July 17, 2009, and emergency feedwater initiation and control (EFIC) system SP-146A, EFIC Monthly Functional Test (During Modes 1, 2, 3), performed on July 13, 2009. The risk deficit for SP-340B was determined to be less than 1E-6 incremental core damage probability deficit (ICDPD). The risk associated with SP-146A was not quantified since it was determined that the system did not lose its functionality during the SP. Utilizing IMC 0609, Appendix K, Maintenance Risk Assessment and Risk Management Significance Determination Process (SDP), Flow Chart 1, the finding was determined to be of very low safety significance (Green). This finding was not assigned a cross cutting aspect since the issue existed for greater than 10 years and is not indicative of current licensee performance.

Enforcement: 10 CFR 50.65(a)(4), Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, requires, in part, that prior to performing maintenance activities, the licensee shall assess and manage the increase in risk that may result from proposed maintenance activities. Contrary to the above, the licensee failed to perform an adequate risk assessment before performing surveillance testing on the EFIC system on July 13, 2009, and the A train DHR system on July 17, 2009. Because the finding is of very low safety significance and has been entered into the

licensee's CAP as NCRs 344062 and 348904, this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000302/2009004-01, Inadequate Risk Assessments When Performing Surveillance Testing.

1R15 Operability Evaluations

a. Inspection Scope

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 TS, 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 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 CAP-NGGC-200, Corrective Action Program.

- NCR 343741, A channel reactor protection system variable pressure trip setpoint did not meet acceptance criteria of SP-110A, "A" Reactor Protection System Functional Testing
- NCR 436331, Make-up valve MUV-3 failed to close
- NCR 355423, Decay heat valve DHV-6 found with improperly crimped greyboot connection
- NCR 348799, DHV-5 failed borescope inspection
- NCR353609, Debris found in emergency diesel generator EGDG-1A jacket water sample

b. Findings

No findings of significance were identified.

1R18 Plant Modifications

Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed the one design change package listed below to verify it met the requirements of procedures EGR-NGGC-0003, Design Review Requirements and EGR-NGGC-0005, Engineering Change. The inspectors observed the as-built configuration of the modification and observed installation, and reviewed testing activities associated with the modification. Documents reviewed included surveillance procedures, design and implementation packages, work orders, system drawings, corrective action documents, applicable sections of the FSAR, ITS, and design basis

information. Post maintenance testing data and acceptance criteria were 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.

- Engineering change EC 72034, Install New Makeup System High Point Vent Valves MUV-654, 655 and 657

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 an/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 five post-maintenance tests reviewed are listed below:

- SP- 340C, MUP-1A, MUP-1B and Valve Surveillance, after installing vent valves on the common suction piping per work orders (WOs) 1479274, 1479278, and 1484250

- SP-110A, “A” Channel Reactor Protection System Functional test, after trouble shooting and repairing the channel per WO 1034515

- SP-340A, RWP-3B, DCP-1B and Valve Surveillance, and Performance Test PT-136B, DC System Flow Balance and EGDG KW Loading (KW loading portion only), after replacing DCP-1B motor per WO 1580666

- Makeup valve MUV-26 relay testing per engineering change EC 66264, after replacing relays during planned maintenance per WO 1320593

- SP-102, Control Rod Drop Time Test (rod 7-5 drop test only), OP-502, Control Rod Drive System (Group 7 only), and PM-126, Electrical Checks of CRD Power Train after replacing the control rod programmable controller per work order WO 1609125

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities

Steam Generator Replacement Refueling Outage RFO16

a. Inspection Scope

The inspectors reviewed the licensee's outage risk assessment report to confirm the licensee had appropriately considered risk, industry experience, and previous site-specific problems, in developing and implementing the outage plan. During the first five days of the outage, the inspectors observed and monitored licensee controls over the outage activities listed below. Documents reviewed are listed in the Attachment. This inspection scope covers the first five days of refueling outage activities. This constitutes a partial sample for this inspection activity. Additional inspection results for RFO16 will be documented in NRC inspection report 05000302/2009005.

- Outage related risk assessment monitoring
- Controls associated with shutdown cooling, reactivity management, electrical power alignments, reactor coolant instrumentation, and containment closure and integrity
- Implementation of equipment clearance activities

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors observed and/or reviewed six surveillance tests listed below to verify that TS 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-340E, DHP-1B, BSP-1B and Valve Surveillance

Surveillance Test:

- SP-354B, Monthly Functional Test of the Emergency Diesel Generator EGDB-1B
- SP-110B, "B" Channel Reactor Protection System Functional Test
- SP-907A, Monthly Functional Test Of 4160V ES Bus "A" Undervoltage and Degraded Grid Relaying
- SP-650, ASME Code Safety Valve Test

Reactor Coolant System Leak Determination Test:

- SP-317, RC System Water Inventory Balance

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

Initiating Events and Mitigating Systems Cornerstones

a. Inspection Scope

The inspectors checked the accuracy of the performance indicators listed below. Performance indicator (PI) data submitted from July, 2008, through June, 2009, 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.

4OA2 Identification and Resolution of Problems

.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.

a. 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 NCR 337555 and NCR 339372 that documented degradation of control complex habitability envelope (CCHE) door seals. The licensee determined that the seals were damaged by the movement of equipment carts through the doorways of the CCHE. The inspectors checked that the issue had been completely and accurately identified in the licensee's corrective action program and that appropriate corrective actions were initiated. The inspectors verified that the NCRs and their associated corrective actions met the requirements of corrective action procedure CAP-NGGC-200, Corrective Action Program.

b. Findings and Observations

No findings of significance were identified. Initial licensee corrective actions included: posting the doors as a CCHE boundary, having a standdown with several work groups that utilized carts, and issuing a site-wide communication describing the issue. The inspectors noted that the corrective actions did not have a lasting effect. With increased cart usage to support pre-outage work, the licensee continued to find degraded door seals. Several additional NCRs were written to document CCHE door seal damage due to cart traffic (NCR 352323, 352343 and 352828). In each instance, the CCHE breach caused by the door seal degradation was well within that which is allowed by design and therefore had no impact on operability. Additional corrective actions that appeared to be effective included: staging personnel at each CCHE door during periods of high cart traffic during pre-outage activities and adding CCHE seal inspections to the operator rounds.

4OA3 Event Follow-up

Operator Performance During Non-Routine Event

a. Inspection Scope

For three non-routine plant evolution 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 manual reactor trip in accordance with emergency operating procedures EOP-2, Vital System Status Verification; EOP-10, Post-Trip Stabilization and EOP 14, Emergency Operating Procedure Enclosures (enclosures 1 and 2 post-trip actions)

- August 25 through August 27, Reactor startup and power ascension in accordance with operating procedures OP-210, Reactor Startup, and OP-204, Power Operations

- September 26 Reactor shutdown to Mode 3 in accordance with SP-209A, Plant Shutdown And Cooldown.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel Activities

a. 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 Steam Generator Replacement Inspection (IP50001)

The inspectors began their review associated with the steam generator replacement (SGR) project. The inspectors reviewed the preparations for heavy load movement and lifting and started the review of the design modification associated with SGR. The majority of the SGR inspection will occur in last quarter of 2009. The results of this inspection will be documented in NRC integrated inspection report 05000302/2009005.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On October 13, 2009, the resident inspectors presented the inspection results to Mr. J. Holt, Plant General Manager, and other members of licensee management. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel:
J. Holt, Plant General Manager
J. Dufner, Manager, Maintenance
S. Cahill, Manager, Engineering
J. Huegel, Manager, Nuclear Oversight
R. Hons, Manager Training
C. Morris, Manager, Operations
D. Westcott, Supervisor, Licensing
B. Akins, Superintendent, Radiation Protection
C. Poliseno, Supervisor, Emergency Preparedness
I. Wilson, Manager Outage and Scheduling
J. Franke, Vice President, Crystal River Nuclear Plant

NRC personnel:
M. Sykes, Chief, Branch 3, Division of Reactor Projects

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Closed

05000302/2009004-01	NCV	Inadequate Risk Assessments When Performing Surveillance Testing (Section 40A1.3)

LIST OF DOCUMENTS REVIEWED

Section 1R05: Fire Protection

Procedures

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

Section 1R06: Flood

Other
Crystal River 3 - 90-day Response to NRC Generic Letter 2007-01, Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients

NCR 350609, License Renewal Inspection Findings in Manholes E2 and E3
NCR 344215, Inspection results of inspections of Manholes and Bunkers E1, E2, E3, E7, SB1 and SB2

Section 1R12: Maintenance Effectiveness

Other

Schulz Electric Company Failure Analysis Report for 100 HP Baldor 460 VAC Motor (DCP-1B)

Section R20: Refueling and Outage Activities

Procedures

AI-504, Guidelines for Cold Shutdown and Refueling
OP-103B, Plant Operating Curves
OP-209A, Plant Shutdown and Cooldown
WCP-102, Outage Risk Assessment
Crystal River 3 Outage Risk Assessment for R16 (AR 314049)

Section OA1: Performance Indicator (PI) Verification

Procedures

CP-217, NRC Performance Indicator (PI) Program

Section: OA2 Problem Identification and Resolution

CAP-NGGC-200, Corrective Action Program
ADM-NGGC-0101, Maintenance Rule Program

Nuclear Condition Reports

NCR 318814 FWV-29, Failure to Open Electrically
NCR 294518 RWV-24, Hard to Operate

Other

Crystal River Unit 3 Caution Tag Log dated July 31, 2009
Crystal River Unit 3 Degraded Equipment List dated July 31, 2009
OPS-NGGC-1000, Conduct of Operations, Attachment 1 – Aggregate Assessment of Operator Challenges, Second Quarter 2009