



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II**
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

December 19, 2012

MEMORANDRUM TO: Ho K. Nieh, Director
Division of Inspection and Regional Support
Office of Nuclear Reactor Regulation

FROM: Richard P. Croteau, Director */RA/*
Division of Reactor Projects

SUBJECT: NRC OVERSIGHT OF CRYSTAL RIVER UNIT 3 DURING
EXTENDED SHUTDOWN

Crystal River Unit 3 has been in an extended outage since September 2009 when the unit was shut down for steam generator replacement. Completion of outage activities and restart of the plant were delayed due to delamination (cracking) of the concrete within the containment walls that occurred during containment tendon detensioning. Initial repairs were completed in 2010 but additional delaminations occurred in 2011 during retensioning of the containment building tendons. The licensee is actively planning repair of the containment building while it evaluates the financial and technical issues related to the project. Physical repairs to the containment have been placed on hold until the project is approved.

Manual Chapter 0351, "Implementation of the Reactor Oversight Process at Reactor Facilities in an Extended Shutdown Condition for Reasons other than Significant Performance Problems", was implemented at Crystal River in 2011 with concurrence from the Division of Inspection and Regional Support. In 2012, the final decision to repair the containment or retire the unit was delayed until after the proposed merger of Progress Energy with Duke Energy. The merger was completed, but the Duke Energy board of directors has not yet made a decision to repair the containment and the timing of the decision is unknown. As the plant has been shutdown for over three years, licensee activity has been further reduced in many areas normally inspected by the NRC. The licensee's reduced activities at the Crystal River site present fewer opportunities to perform risk-significant inspections. Therefore, Region II proposes that the Crystal River inspection plan be revised to reflect the reduced number of sample opportunities that are available for inspection under the Reactor Oversight Process.

This revised inspection plan will become effective on January 1, 2013, and will be valid for the shutdown period until revised or superseded. Inspection plan updates will be made as necessary based on the licensee's progress in returning the unit to operation. Manual Chapter 0351, Section 04.03 states that the Director, Division of Inspection and Regional Support, is required to concur with the regional decision to implement this Manual Chapter and any associated inspection plan. Region II hereby requests this concurrence.

CONTACT: Daniel W. Rich, DRP/RII
404-997-4721

The revised inspection plan addresses accomplishment of the Reactor Oversight Process baseline inspection procedures and includes observations of the planned structural repairs to the containment building. Inspections will verify acceptable performance of major testing activities including tests associated with steam generator replacement, the containment building structural integrity test, and the containment integrated leak rate test. The inspection plan describes the current status of performance indicators and inspections planned to address invalid performance indicators. As plant repairs and testing near completion, the inspection plan will be amended, with NRR concurrence, to focus on readiness for restart, including an Operational Readiness Assessment Inspection. Your review regarding this request for a revision to the inspection plan for Crystal River is appreciated.

X Approved

/RA By Allen Howe For/
Ho K. Nieh, Director
Division of Inspection and Regional Support

01/16/2013
Date

Enclosure: As stated

CRYSTAL RIVER UNIT 3 INSPECTION PLAN: Revision 1

Background Information:

Crystal River Unit 3 was shutdown on September 26, 2009, for a steam generator replacement refueling outage. During the creation of a temporary opening in the reactor containment building to support steam generator replacement, the licensee discovered cracking or delamination in the wall of Bay 3-4 of the concrete containment. Bay 3-4 was subsequently repaired and retensioning of the containment building tendons began in January 2011. In March 2011 delamination of Bay 5-6 occurred during retensioning. In June 2011, Progress Energy announced the decision to repair the reactor building, including an estimate that repairs should be completed and the unit returned to service in 2014. In July 2011, a third delamination occurred in Bay 1-2 even though all retensioning activities had been suspended. The unit is currently in a no-mode condition with the core fully offloaded to the spent fuel pool.

MC 0351, "Implementation of the Reactor Oversight Process at Reactor Facilities in an Extended Shutdown Condition for Reasons other than Significant Performance Problems", was implemented for Crystal River in 2011. The approved inspection plan is electronically available from the Publicly Available Record (PARS) component of the NRC's document system (ADAMS) under ML112590546.

In 2012, the final decision to repair the containment or retire the unit was delayed until after the proposed merger of Progress Energy with Duke Energy. The merger was completed, but the Duke Energy board of directors has not yet made a decision to repair the containment and the timing of the decision is unknown. As the plant has been shutdown for over three years, licensee activity has been reduced in many areas normally inspected by the NRC. Therefore, the inspection plan is being revised to reflect the reduced number of sample opportunities that are available for inspection under the Reactor Oversight Process.

This revised inspection plan will become effective on January 1, 2013, and will be valid for the entire shutdown period. Updates will be made as necessary based on the licensee's progress in returning the unit to operation. Prior to restart, the inspection plan will be updated to reflect those inspections necessary to ensure operational readiness of the licensee for reactor restart, including an Operational Readiness Assessment inspection.

INSPECTION PLAN

1. BASELINE INSPECTIONS

- a. The following resident inspector baseline inspection procedures (IP) are expected to be completed with at least the minimum number of samples specified in the respective IP or as noted in the comments below. In order to maintain an adequate level of oversight of licensed operator proficiency, the licensed operator requalification quarterly observation by the resident inspectors shall be performed two times per quarter.

Enclosure

| IP Number | Title/Section | Comments |
|-----------|---|---|
| 71111.01 | Adverse Weather Protection | Complete as specified by IP |
| 71111.04 | Equipment Alignment/Partial | 1 sample per quarter minimum |
| | Equipment Alignment/Complete | In addition to the IP minimum of 2 samples per year, inspection of MU and EFW per Note 2 |
| 71111.05 | Fire Protection/walkdowns | 2 samples per quarter minimum |
| | Fire Protection/Fire Drill | Complete as specified by IP |
| 71111.06 | Flood Protection Measures | Complete as specified by IP |
| 71111.07 | Heat Sink Performance | Complete as specified by IP |
| 71111.11 | Licensed Operator Requalification Training | 2 licensed operator requalification observations per quarter. |
| | Control Room Observations | Control room observations are not required due to the lack of periods of heightened activity or risk in the control room. |
| 71111.12 | Maintenance Effectiveness | 4 samples per year minimum |
| 71111.19 | Post Maintenance Testing | 12 samples per year minimum |
| 71111.20 | Refueling and Outage Activities | Complete as specified by IP |
| 71111.22 | Surveillance Testing | 12 samples per year minimum |
| 71114.06 | Drill Evaluation | Complete as specified by IP |
| 71152 | PI&R: In-Depth Reviews | Minimum of 3 in-depth reviews per year |
| | PI&R: Semiannual Trend Reviews | Minimum of 2 semiannual trend reviews per year |
| | PI&R: Operator Work Arouns | The annual sample for operator work-arounds will not be completed during the extended shutdown period since OWAs are not applicable with the core offloaded to the spent fuel pool (SFP). |
| 71153 | Event Follow-up & Notices of Enforcement Discretion | Complete as specified by IP |
| 71130.11 | MC&A (due 2013) | Complete as specified by IP |

- b. The minimum number of inspection samples may not be completed for the following resident inspector baseline IPs:

| IP Number | Title/section | Comments |
|-----------|---|---|
| 71111.13 | Maintenance Risk Assessment & Emergent Work Control | Not applicable with all the fuel offloaded to the spent fuel pool. Maintenance Risk assessment is performed under IP 71111.20 |

| IP Number | Title/section | Comments |
|-----------|---|--|
| 71111.15 | Operability Determination and Functionality Assessments | Due to the extended shutdown period, availability of samples is limited. |
| 71111.18 | Plant Modifications | Due to the extended shutdown period, availability of samples may be limited. |
| 71151 | Performance Indicator Verification | Refer to item 2 and notes |

c. DRS baseline and other team inspections:

| IP Number | Title/section | Comments |
|-----------|---|---|
| 71111.05 | Triennial Fire Protection Inspection | Inspection scope left to regional discretion |
| 71111.08 | Biennial Inservice Inspection Activities | Inspection completed in 2009 (ML100250014). Inspection scope left to regional discretion. |
| 71111.11 | Biennial Licensed Operator Requalification | Complete as specified by IP |
| 71111.17 | Triennial Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications | Inspection scope left to regional discretion |
| 71111.21 | Triennial Component Design Basis Inspection | Inspection scope left to regional discretion |
| 71114 | Reactor Safety Emergency Preparedness baseline inspections (including all attachments) | Complete as specified by IP |
| 71124 | Radiation Safety—Public and Occupational baseline inspections (including all attachments) | Adjust level of effort based on plant conditions |
| 71130 | Security baseline inspections (including all attachments) | Complete as specified by IP |
| 71152 | Problem Identification and Resolution, Biennial Inspection | Inspection scope left to regional discretion |

d. Additional targeted inspections to be completed:

| IP Number | System/area | Comments |
|--|--|---|
| 71111.20 | Foreign material exclusion controls of the spent fuel pool (SFP) area during containment repair activities | Verify controls are in place to ensure containment repair activities are not impacting the SFP |
| 71111.20 (also using applicable guidance contained in IP 60801, Spent Fuel Pool Safety at Permanently Shutdown Reactors) | SFP Safety | Ensure that containment repair activities have no impact on the SFP and SFP cooling support systems |
| 41500 | Training | Regional discretion to ensure operator proficiency |

e. Reactor Building repair inspection:

| IP Number | Title/section | Comments |
|-----------------------------------|--|---|
| 50001 | Steam Generator Replacement Inspection | This IP will continue to be used to support inspections associated with the repair of the containment. The lead for this inspection will be the Division of Reactor Safety with assistance from the CR3 resident inspectors. DRS should provide an inspection plan that covers containment repair and testing activities such as integrated leak rate and structural integrity tests. |
| 46051, 46053, 46055, 46061, 46071 | Structural Concrete Procedure/ Work Observation/Record Review, Structural Masonry, Expansion Anchors | These IPs will be implemented as necessary. |

f. Layup inspections:

| IP Number | Title/section | Comments |
|-----------|--|---|
| 71152 | Building Spray, EFW, MU, RCS Systems and Once Through Steam Generators | These systems are in a layup condition. Perform an annual sample to verify satisfactory implementation of layup requirements. |

2. PERFORMANCE INDICATORS (PIs)

Due to the extended shutdown, several PIs are no longer valid. The table below lists invalid PIs and describes those ROP inspections necessary to compensate for PIs which are no longer valid.

| Performance Indicator | ROP inspections planned during Extended Shutdown | Comments |
|--|--|--|
| Unplanned Scrams, Unplanned Power Changes, and Unplanned Scrams with Complications | NONE | PIs are not valid. Unplanned Scrams and Unplanned Power Changes PIs will be valid after the unit is critical for 2400 hrs. Unplanned Scrams with Complications PI will become valid after unit startup |
| RCS leakage and Activity | NONE | PIs are not valid. RCS Leakage will become valid in Mode 4, RCS activity PI will become valid in Mode 3 (>500F) |
| MSPI Emergency AC (EDG) | NONE See Notes 1, 2 | Note 3 |
| MSPI HP Safety Injection (MU System) | NONE See Notes 1, 2 | Note 3 |
| MSPI Heat Removal (EFW) | NONE See Notes 1, 2 | Note 3 |
| MSPI RHR (DHR) | NONE See Notes 1, 2 | Note 3 |
| MSPI Cooling water (SW/DC/RW systems) | NONE See Notes 1, 2 | Note 3 |
| PIs associated with EP, RP and Safeguards | Routine DRS inspections | PIs remain valid |

Note 1: MSPIs consist of the sum of the unavailability of the applicable systems plus the unreliability for the system during the previous twelve quarters. Unavailability is only counted if the reactor is critical. Based on the lack of critical hours since Sept 2009 and the projection that the unit will remain shut down for several years, the MSPIs are invalid. MSPI inspections specified in IP 71151 will not be performed until after unit startup.

Note 2: The licensee maintains a regular surveillance program on the emergency AC system (EDG), DHR system, and the cooling water systems (RW/SW/DC). For these systems, there continues to be an opportunity to identify Mitigating Systems (MS) functional failures and other system problems. To provide confidence the licensee is properly maintaining these systems, the resident inspectors will continue to perform baseline ROP inspections (PMT, Surveillance, Mods, operability etc) for these systems. The makeup (MU) and emergency feed water (EFW) systems have NOT been routinely operated or tested during the extended outage. If opportunities arise, the residents will perform baseline inspections for the MU and EFW systems. Annually, the resident inspectors will inspect the MU and EFW systems using the guidance of IP 71111.04, Equipment Alignment, Section 02.02, Complete Walkdown. These two inspection samples for the MU and EFW systems are in addition to the level of effort specified in IP 71111.04 for complete alignments.

Note 3: After unit restart, PI data submitted by the licensee will be reviewed utilizing IP 71151 on at least an annual basis. Additional inspections will be performed to compensate for invalid PIs until sufficient data has accumulated to provide for each valid PI. An inspection plan will be developed at a later date to reflect the additional inspection requirements.