



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
2100 RENAISSANCE BLVD.  
KING OF PRUSSIA, PA 19406-2713**

October 26, 2017

Terry Hobbs  
Decommissioning General Manager  
Duke Energy Florida, LLC  
Crystal River Unit 3  
15760 W. Power Line Road  
Crystal River, FL 34428-6708

**SUBJECT: NRC INSPECTION REPORT NO. 05000302/2017002, DUKE ENERGY  
FLORIDA, LLC, CRYSTAL RIVER UNIT 3, CRYSTAL RIVER, FLORIDA**

Dear Mr. Hobbs:

On October 2 - 5, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an on-site inspection under Inspection Manual Chapter 2561, "Decommissioning Power Reactor Inspection Program," at the permanently shut down Crystal River Nuclear Plant Unit 3 (CR-3). The inspectors examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and the conditions of your license. The inspection consisted of observations by the inspectors, interviews with personnel, and a review of procedures and records. The results of the inspection were discussed with Ivan Wilson, Manager – Operations and Maintenance, and other members of the CR-3 staff on October 5, 2017, and are described in the enclosed report. No findings of safety significance were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure(s), and your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC document system (ADAMS), accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Current NRC regulations and guidance are included on the NRC's website at [www.nrc.gov](http://www.nrc.gov); select Radioactive Waste; Decommissioning of Nuclear Facilities; then Regulations, Guidance and Communications. The current Enforcement Policy is included on the NRC's website at [www.nrc.gov](http://www.nrc.gov); select About NRC, Organizations & Functions; Office of Enforcement; Enforcement documents; then Enforcement Policy (Under 'Related Information'). You may also obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-866-512-1800. The GPO is open from 8:00 a.m. to 5:30 p.m. EST, Monday through Friday (except Federal holidays).

T. Hobbs

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No reply to this letter is required. Please contact Steve Hammann, at 610-337-5399, if you have any questions regarding this matter.

Sincerely,

***/RA MRoberts for/***

Raymond J. Powell, Chief  
Decommissioning, ISFSI, and Reactor HP  
Branch  
Division of Nuclear Materials Safety

Docket No. 05000302  
License No. DPR-72

Enclosure: Inspection Report 05000302/2017002  
w/Attachment

cc w/encl: Distribution via ListServ

T. Hobbs

2

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U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

INSPECTION REPORT

Inspection No.	05000302/2017002
Docket No.	05000302
License No.	DPR-72
Licensee:	Duke Energy Florida, LLC (Duke Energy)
Facility:	Crystal River Unit 3 (CR-3)
Location:	15760 W. Power Line Road Crystal River, FL 34428-6708
Inspection Dates:	October 2 - 5, 2017
Inspector:	Stephen Hammann, Senior Health Physicist Decommissioning, ISFSI, and Reactor HP Branch Division of Nuclear Materials Safety, Region I  Katherine Warner, Health Physicist Decommissioning, ISFSI, and Reactor HP Branch Division of Nuclear Materials Safety, Region 1
Approved By:	Raymond Powell, Chief Decommissioning, ISFSI, and Reactor HP Branch Division of Nuclear Materials Safety, Region I

Inspection Report No. 05000302/2017002

## **EXECUTIVE SUMMARY**

Duke Energy  
Crystal River Nuclear Plant  
NRC Inspection Report No. 05000302/2017002

An announced CR-3 decommissioning on-site inspection was performed October 2 - 5, 2017. The inspection included a review of organization and management oversight, design changes, audits and corrective action program, spent fuel pool (SFP) safety, maintenance and surveillance, and decommissioning status. The inspection consisted of observations by the inspectors, interviews with Duke Energy personnel, a review of procedures and records, and plant walk-downs. The NRC's program for overseeing the safe operation of a shut-down nuclear power reactor is described in Inspection Manual Chapter (IMC) 2561, "Decommissioning Power Reactor Inspection Program."

Based on the results of this inspection, no findings of safety significance were identified.

## **REPORT DETAILS**

### **1.0 Background**

On February 20, 2013, Duke Energy sent a letter [Agency Documentation and Management System (ADAMS) Accession Number ML13056A005] to the NRC certifying the permanent cessation of activities and certifying that the fuel had been permanently removed from the reactor. This met the requirements of 10 Code of Federal Regulations (CFR) 50.82(a)(1)(i) and 50.82(a)(1)(ii). CR-3 is currently in the SAFSTOR phase of decommissioning as described in IMC 2561.

### **2.0 SAFSTOR Performance and Status Review**

a. Inspection Scope [Inspection Procedures (IPs) 36801, 37801, 40801, 60801, 62801, 71801]

The inspectors conducted document reviews, attended management and personnel meetings, and interviewed plant personnel to verify regulatory requirements were properly implemented with respect to the site organization, staffing and staff qualifications, including certified fuel handler (CFH) and employee training programs. The inspectors reviewed procedures and processes to evaluate Duke Energy's ability to resolve employee safety concerns, disseminate safety information and effectively resolve identified problems. The inspectors reviewed Duke Energy's decommissioning activities to verify they were performed in a manner consistent with the Post Shutdown Decommissioning Activities Report (PSDAR).

The inspectors conducted document reviews and interviews with plant personnel to verify Duke Energy procedures and processes conform to the regulations and guidance associated with 10 CFR 50.59 and changes made by Duke Energy under 10 CFR 50.59 did not require prior NRC approval. The inspectors reviewed the qualification and training for 10 CFR 50.59 evaluators, directions for performing reviews of proposed changes, and an evaluation performed of the modification to install a temporary air conditioning unit in the fuel handling building.

The inspectors reviewed documents and interviewed CR-3 personnel to verify Duke Energy management performed audits and self-assessments, and ensured issues were identified and corrected in accordance with the site's corrective action program (CAP). The inspectors reviewed a representative selection of CAP documents to determine if a sufficiently low threshold for problem identification existed, follow-up evaluations were of sufficient quality, and Duke Energy assigned timely and appropriate prioritization for issue resolution commensurate with the significance of the issue. The inspectors also reviewed the project oversight plan for the dry fuel storage project.

The inspectors reviewed Duke Energy's programs for the safe wet storage of spent fuel. The inspectors performed a walk-down of the SFP and associated support systems to assess material condition, configuration control, and system operation. The inspectors toured the control room and interviewed certified fuel handlers to verify SFP system instrumentation, alarms and leakage detection monitoring is adequate to assure the safe

storage of spent fuel. The inspectors interviewed employees and reviewed a representative selection of SFP chemistry sample analysis that Duke Energy had performed in the past year in order to verify SFP chemistry parameters were within the limits of Duke Energy's license commitments. The inspectors also reviewed data from the spent fuel pumps to verify that the system was operating within the expected parameters with no negative trends.

The inspectors accompanied plant personnel on a walk-down of key safety systems, structures and components (SSCs) important to the defueled condition of the plant. During the walk-down, the inspectors evaluated housekeeping and the material condition of the SSCs and assessed area radiological conditions and radiological access controls, including posting and labeling. The inspectors also met with CR-3 maintenance supervisors and discussed staffing levels, how routine maintenance and emergent work is requested, prioritized, and scheduled, and the current maintenance workload. The inspectors reviewed the backlog of maintenance work to assess the age and prioritization of the items. The inspectors reviewed the maintenance rule program and procedures, as well as the performance criteria and monitoring procedures of systems and components.

b. Observations and Findings

The inspectors verified that management oversight was adequate for the SAFSTOR phase of decommissioning and that no significant changes had been made to the CR-3 SAFSTOR organization since the previous inspection. The inspectors determined that training programs were being appropriately implemented, workers are able to check their training qualifications via computerized system, and notifications are automatically emailed to workers and their supervisors when training is due. The inspectors determined safety issues are reported to management and the site has monthly safety meetings and weekly safety implementation meetings. The inspectors noted that Duke Energy has not made any changes to their PSDAR in the past year.

The inspectors determined that 10 CFR 50.59 screenings and evaluations are being performed and that Duke Energy has trained and qualified individuals to perform the evaluations. The inspectors determined that changes under 10 CFR 50.59 did not require prior NRC approval and safety reviews were performed for design changes and modifications.

The inspectors determined that issues were being identified and entered into the CAP and evaluated commensurate with their safety significance. The inspectors verified audits were being performed by qualified individuals independent of the organization being audited and quality assurance oversight of major activities was being performed.

The inspectors determined that Duke Energy was safely storing spent fuel in wet storage. The inspectors verified spent fuel pool chemistry and cleanliness controls were being adequately implemented. The inspectors verified surveillance requirements for water level and temperature of the SFP were adequate and procedures provided guidance to restore SFP water level if required. The inspectors also verified the CFH

rounds were adequate to satisfy the associated technical specification requirements for the SFP.

The inspectors verified that all systems that supported spent fuel safety continued to be appropriately scoped in to the maintenance rule and that the performance criteria established were acceptable. The inspectors verified that the maintenance and surveillance program for systems and components had been conducted in accordance with the technical specifications requirements and established procedures. The inspectors noted during the plant walk-down that housekeeping and plant material condition standards were being maintained. The inspectors determined that workers followed work plans, surveillance procedures and industrial safety protocols and were aware of job controls specified in work instructions. The inspectors determined that the maintenance backlog is reviewed by site management on a regular basis.

### **3.0 Exit Meeting Summary**

On, October 5, 2017, the inspectors presented the inspection results to Ivan Wilson, Manager – Operations and Maintenance, and other members of Duke Energy's staff. The inspectors confirmed that proprietary information was not removed from the site.



## **PARTIAL LIST OF PERSONS CONTACTED**

B. Akins, Radiation Protection and Chemistry Manager  
P. Dixon, Manager - Technical Support Manager  
A. Doruff, Supervisor Nuclear Shift Operations  
B. Ferguson, Supervisor Nuclear Shift Operations  
C. Gavin, Nuclear Performance Specialist  
J. Lane, Engineering  
C. Langford, Supervisor Nuclear Maintenance  
P. Rose, Licensing  
M. Van Sicklen, Licensing  
I. Wilson, Ops/Maintenance Manager  
H. Wojtasinski, Supervisor Nuclear Maintenance

## **ITEMS OPEN, CLOSED, AND DISCUSSED**

None

## **LIST OF DOCUMENTS REVIEWED**

### Audits and Reports

2017-CR3-CONSQLA-01, NUCLEAR OVERSIGHT – AUDIT, Crystal River Consolidated QA, Technical Specification, Operating License, Fuels and ISFSI Audit  
NPOP 2014-002, NOS Nuclear Project Oversight Plan for Crystal River 3 Dry Fuel Storage Project, Rev. 3

### CRs

02091396, 02139529, 02109956, 02114073, 02137042, 02137061

### Diagrams

Control Complex Chilled Water, FD-302-786  
Spent Fuel Chilled Water System, FD-302-785  
Spent Fuel System Flow Diagram, FD-302-621

### Miscellaneous

50.59 Evaluation for EC 407307  
50.59 Screenings, July 2016 – August 2017  
Basic Cause Evaluations Since August 2016  
CR3 Maintenance Backlog  
Crystal River (CR3) Audit List  
Maintenance Rule Scoping and Performance Criteria  
Model Work Order Number 10221448-01, Quarterly test run of SFP-1A  
Model Work Order Number 10221449-01, Quarterly test run of SFP-1B

### Procedures

AAG-005, Contingencies for Loss of SF Pool Level, Rev. 4  
ADM-0101, Maintenance Rule Program, Rev. 1  
AI-1000, Housekeeping/Material Condition Program, Rev. 48  
AI-1806, CR-3 Safety Committee, Rev. 25  
AD-NO-ALL-0102, Audit System Design, Rev. 1  
AD-NO-ALL-0305, Integrated Scheduling of Audits and Assessments, Rev. 4  
AD-NO-ALL-1001, Conduct of Audit, Rev. 4  
AI-2205, Administration of CR-3 Fire Brigade Organization and Duties of the Fire Brigade, Rev. 28  
AI-301, Plant Nuclear Safety Committee Charter, Rev. 21  
AI-4002, Site Specific Actions and Oversight Expectations, Rev. 9  
AI-9003, System Evaluation, Categorization, and Abandonment, Rev. 7  
CAP-0200, Conduct of Performance Improvement, Rev. 4  
CH-513A, Spent Fuel Coolant Sampling (SFP), Rev. 4  
EM-220D, Violent Weather (Permanently Defueled), Rev. 6  
ISFS-320, ISFSI HSM Initial or Post Accident Monitoring, Rev. 3  
MNT 1000, Conduct of Maintenance, Rev. 1  
NOS-1000, CR3 Nuclear Oversight – Conduct of Operation, Rev. 1  
OP-406, Spent Fuel Cooling System, Rev. 102  
REG-0010, 10 CFR 50.59 and Selected Regulatory Reviews, Rev. 6  
SAF-2172, Industrial Safety, Rev. 2  
SP-300D, Defueled Daily Surveillance Log, Rev. 11  
SP-318, Spent Fuel Pool Boron Concentration Verification, Rev. 6  
TAP-408, Development and Conduct of Job Performance Measures, Rev. 11  
TPP-0900, Maintenance Personnel Training Program, Rev. 1  
TPP-901, Certified Fuel Handler Training and Retraining Program, Rev. 1  
TRN-1000, DTO – Performance Based Training, Rev. 2

### **LIST OF ACRONYMS USED**

ADAMS	Agency Documentation and Management System
CAP	Corrective Action Program
CFH	Certified Fuel Handler
CFR	Code of Federal Regulations
CR-3	Crystal River Unit 3
Duke Energy	Duke Energy Florida, Inc.
IMC	Inspection Manual Chapter
IP	Inspection Procedure
NRC	U.S. Nuclear Regulatory Commission
PSDAR	Post Shutdown Activities Report
SFP	Spent Fuel Pool
SSC	Systems, Structures, and Components