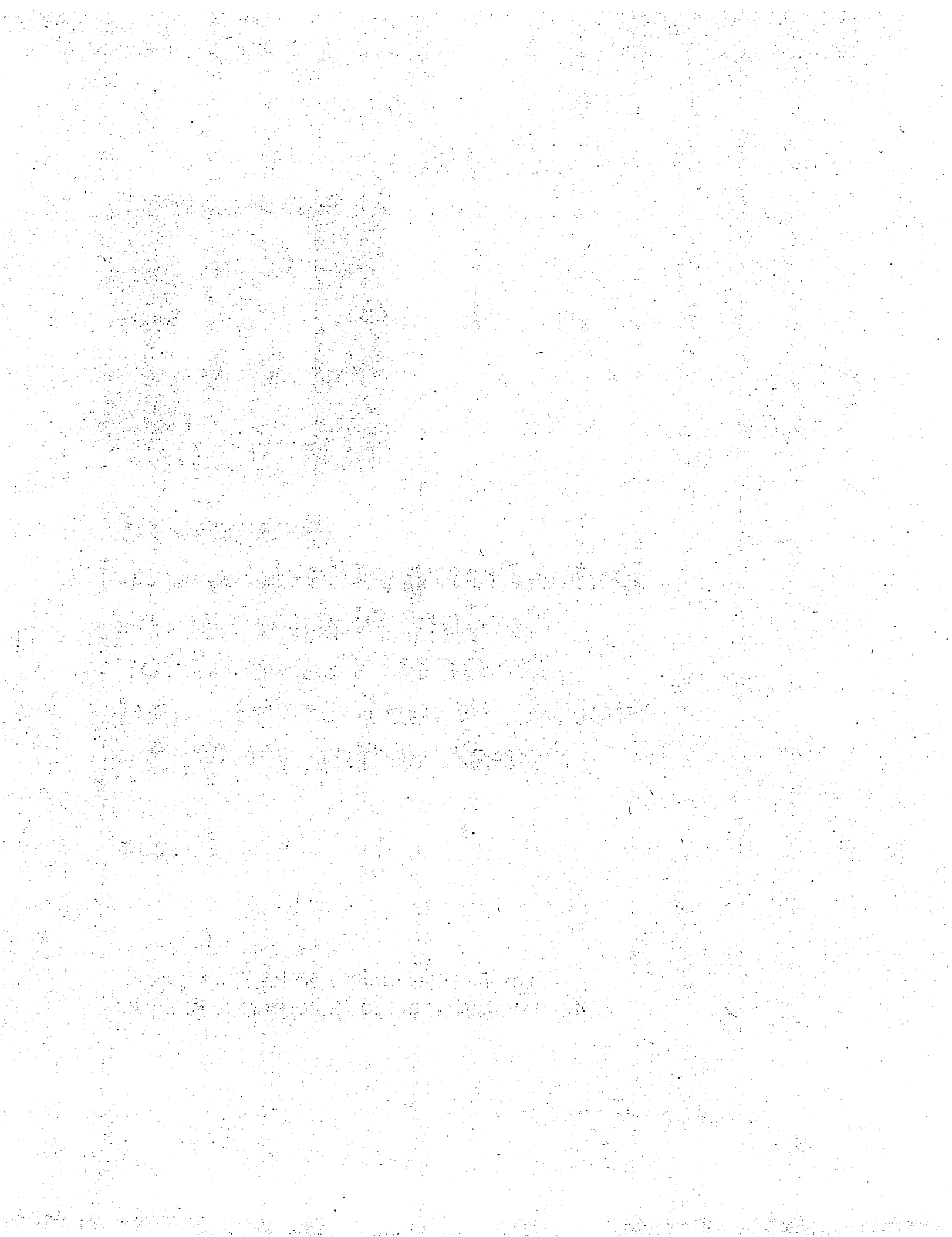


**Review of
Duke Energy Florida, LLC
Project Management
Internal Controls for
Nuclear Plant Up-rate and
Construction Projects**

June 2016

BY AUTHORITY OF
The Florida Public Service Commission
Office of Auditing and Performance Analysis



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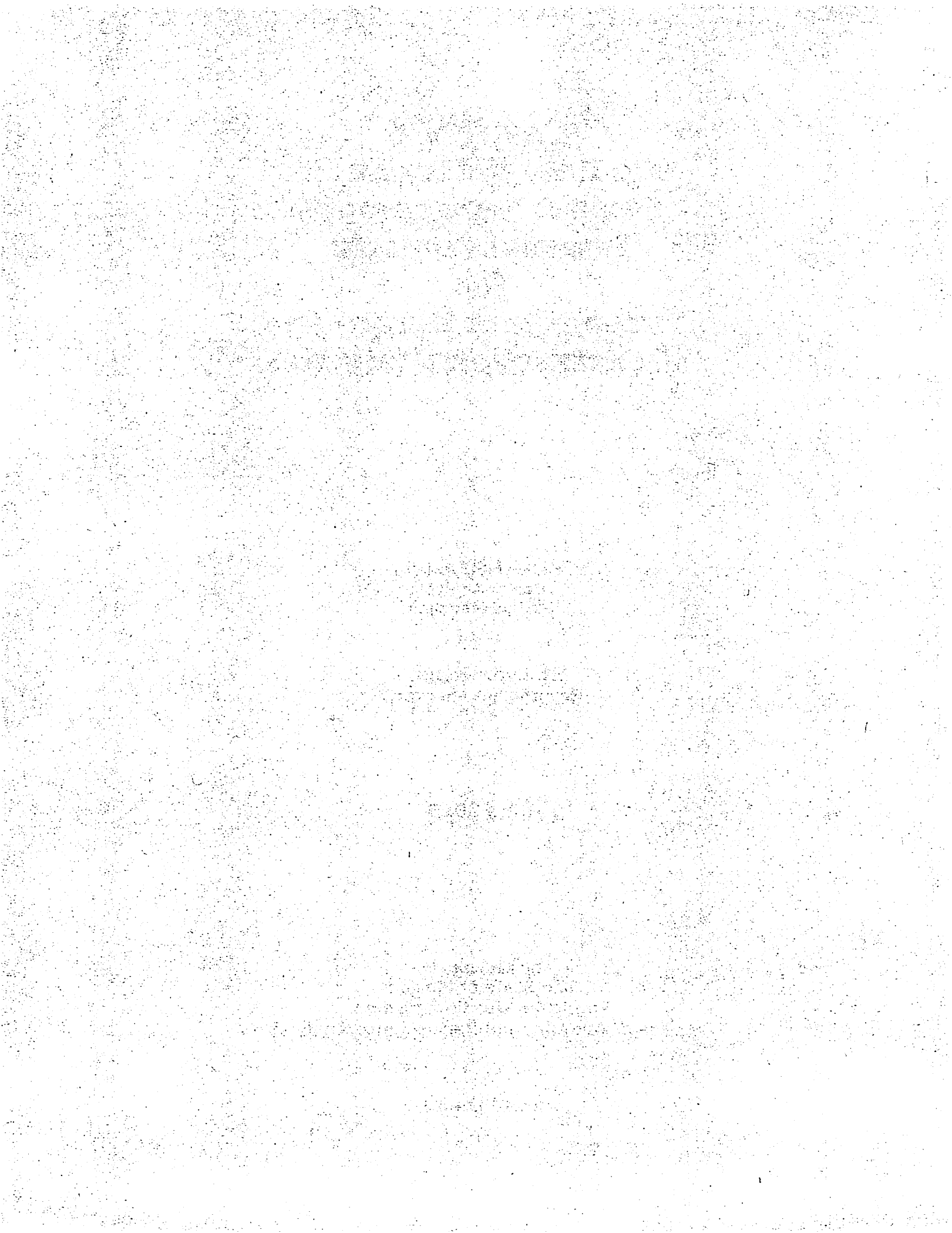


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1.0 Executive Summary

1.1 Projects at a Glance

Levy Nuclear Project

- ◆ No 2015 COL-related costs are presented for Nuclear Cost Recovery Clause (NCRC) recovery, pursuant to the 2013 stipulation.
- ◆ DEF continued wind-down activities for LNP during 2015.
- ◆ DEF dispositioned LNP long-lead variable frequency drive equipment.
- ◆ LNP Combined Operating License (COL) schedule was extended due to final AP1000 design-related issues.
- ◆ The Engineering Procurement and Construction (EPC) contract litigation between DEF and Westinghouse Electric Company is scheduled for trial in October 2016. The outcome of this litigation, the impact on final disposition of remaining Long Lead Equipment (LLE), and final recoverable costs of the LNP project are not fully known at this time.

Crystal River 3 Extended Power Uprate

- ◆ The CR3 Investment Recovery Project closed on April 30, 2015.
- ◆ DEF continued wind-down activities for CR3 EPU assets during 2015.
- ◆ All net proceeds (\$1.7 million) from the sale and transfer of EPU-related assets are to be returned to customers.
- ◆ All IRP team members have been released or reassigned to other parts of the company.
- ◆ All remaining installed EPU equipment has been abandoned in place and no other potential EPU sales are currently being evaluated.
- ◆ The CR3 *EPU assets* were a part of a larger decision process for the overall disposition of all CR3 assets. Dispositioning decisions were executed in compliance with Duke Energy Florida's Investment Recovery governance process and were made on the basis of what would maximize the recovery value for all CR3 assets.

1.2 Audit Execution

1.2.1 Purpose and Objectives

The purpose of this audit was to assess DEF's project management oversight and dispositioning of long-lead equipment (LLE) for the Levy Nuclear Power Project (LNP) and to provide an update and assessment of the investment recovery project for the Crystal River Energy Complex Unit 3 (CR3) Regulatory Assets.

Each year, from 2008 to date, Commission audit staff has conducted an audit that focused on project internal controls and management oversight for DEF's Levy and Crystal River nuclear projects. Information in each of these reports is used by the Florida Public Service Commission (FPSC or Commission) to assess the reasonableness of DEF's cost-recovery requests. These audits are available on the Commission website. The primary objective of this audit is to provide an independent account of project activities and to evaluate DEF's 2015 internal project controls.

1.2.2 Scope

Planning, research and data collection for this review was performed in December 2015 through May 2016. The internal controls assessed were related to the following key areas of project activity:

- ◆ Planning
- ◆ Management and organization
- ◆ Cost and schedule controls
- ◆ Auditing and quality assurance

Comprehensive controls are essential for successful project management. However, adequate and comprehensive controls are ineffective if not actively emphasized by management, embraced by the organization, and subject to oversight and revision. Proper internal controls minimize risk, enhance its mitigation and management, and aid efficient, reasoned decision making.

Risk must be timely and accurately identified, with adequate safeguards created, vetted, and actively in use to provide prevention or mitigation. Prudent decision making also plays a key role in project management, resulting from well-defined processes addressing identified project risks, expectations, and cost. Effective communication, adherence to clear procedures, and vigilant oversight are also essential to ensure prudent project decisions.

The primary standard used by Commission audit staff for review of DEF internal controls associated with the LNP and CR3 projects is the Institute of Internal Auditors' *Standards for the Professional Practice of Internal Auditing* and *Internal Control - Integrated Framework*. Staff's audit work is performed in compliance with Institute of Internal Auditors Performance Standards 2000 through 2500. This set of standards was developed by the Committee of Sponsoring Organizations (COSO) of the Treadway Commission. Staff's internal control assessments focused on the COSO framework's five key, interrelated elements of internal control:

- ◆ Control environment
- ◆ Risk assessment

- ◆ Control activities
- ◆ Information and communication
- ◆ Monitoring

To maximize operational effectiveness and efficiency, reliability of financial reporting, and compliance with applicable laws and regulations, all five components must be present and functioning in concert to conclude that internal controls are effective.

1.2.3 Methodology

Initial planning, research, and data collection for this review occurred during January 2016. Additional data collection, analysis, and report writing were conducted during February through May 2016. The information compiled in this report was gathered via staff review of company responses to document requests, and review of testimony, discovery, and other filings in Docket No. 160009-EI. Specific information reviewed by staff includes:

- ◆ Policies and procedures
- ◆ Organizational structures
- ◆ Contract requests for proposal
- ◆ Contractor bids
- ◆ Bid evaluation analyses
- ◆ Contracts
- ◆ Change orders
- ◆ Internal audit reports and quality assessment reviews

1.3 Commission Audit Staff Observations

Commission audit staff identified no concerns regarding Duke Energy Florida, LLC (DEF) Levy Nuclear Project (LNP) activities in 2015 and the final disposition of Crystal River Unit 3 (CR3) Extended Power Uprate (EPU) assets. Below are audit staff's key observations based on 2015 events.

1.3.1 Levy Nuclear Plant

During 2015, DEF continued LNP project wind-down activities, including litigation, dispositioning of LNP assets, and pursuit of the Combined Operating License (COL).

The Westinghouse litigation against DEF delays final disposition of the remaining LNP Long Lead Equipment (LLE) procured under the EPC contract. The final schedule, and NCRC-related costs for the LNP close-out, cannot be accurately predicted until the EPC contract litigation has completed.

DEF completed disposition of the LNP variable frequency drive equipment, through an internal transfer to Units 4 and 5 at the Crystal River Complex. Disposition documentation evidences the transfer decision, and compliance with company guidelines and procedures. Commission audit staff believes that the transfer of these LNP assets was in the best interest of the company and its ratepayers.

DEF continued efforts to obtain the Levy NRC COL, and estimates the COL will be received in the last quarter of 2016. COL costs are not requested for recovery in 2015, pursuant to the Commission approved stipulation agreement.

1.3.2 CR3 Extended Power Uprate

On April 30, 2015, DEF closed the CR3 Investment Recovery Project. The Investment Recovery Project organization supporting the disposition of the CR3 assets was disbanded and all general reporting and key performance indicators used by management to monitor the Investment Recovery Project ended.

The company believes that it received the appropriate market value for each CR3 asset sold. An overriding consideration is the understanding that, while many nuclear plants contain similar components, the equipment in question is often designed to specification for the intended generating unit. As such, many of the high-valued assets were only marketable at salvage-value.

Commission audit staff believes that DEF made appropriate efforts to identify and market its assets to a wide range of potential buyers. Commission audit staff believes DEF's dispositioning steps were reasonable and allowable under the company's written procedures.

2.0 Levy Nuclear Project

DEF decided in July 2013 to cancel the construction schedule for the Levy Nuclear Project, while continuing to seek the NRC COL. The Florida Public Service Commission (FPSC or “Commission”) approved a settlement agreement in Docket No. 130208-EI allowing DEF to pursue this plan.

2.1 EPC Contract Litigation Status

Since January 2014, DEF has conducted negotiations with Westinghouse to close-out its Engineering, Procurement, and Construction (EPC) contract. While DEF was able to resolve contract issues with other project vendors, it was unable to resolve the Westinghouse contractual dispute regarding cancellation costs for the EPC contract.

Both companies have filed separate lawsuits, each asking for financial compensation from the other. DEF is seeking a \$54 million Long Lead Equipment (LLE) refund and Westinghouse is seeking \$512 million in termination fees and contract costs. The Western District Federal Court of North Carolina originally scheduled the case to be heard beginning in February 2016. However, the court modified the hearing schedule in February 2016, and currently the trial is scheduled to begin in October 2016. **Exhibit 1** shows the modified schedule dates for the case.

Duke Energy Florida Westinghouse Contract Litigation Revised Trial Schedule	
Action	2016
Discovery Completion	June 2016
Expert Reports	April/May 2016
Dispositive Motions	July 2016
Trial	October 2016

Exhibit 1

Source: DEF Responses to Data Request 1.19

The company has limited discussion of litigation details to the schedule and description of company activities for LLE asset disposition outside of specific EPC-related contractual issues. The company continues efforts to finalize the Levy COL, but remains reliant on Westinghouse for critical engineering data. Currently, Westinghouse continues to provide DEF and the NRC with necessary critical technical revision information for pursuing the COL. However, Westinghouse delays in providing updated design revision information in 2015 slipped the estimated completion date for the Levy COL to late in 2016.

2.2 Asset Disposition

At the time DEF cancelled the EPC contract, much of the LLE was in various stages of fabrication by vendors.

In January 2014, as part of the wind-down activities for the LNP project, DEF developed the Levy Nuclear Plant Long-lead Equipment Disposition Plan for LLE procured through the EPC contract. After review and evaluation, DEF management decided to dispose of all LLE items under the EPC contract, considering possible reuse at another Duke Energy plant, sale to another AP1000 group owner or Westinghouse sub-contractor, or sale for salvage/scrap value.

In December 2015, DEF management decided to transfer the variable frequency drive LLE to Units 4 and 5 at the Crystal River 3 Energy Complex. The company provided written justification of its decision to transfer the variable frequency flow equipment, noting that the value of the internal transfer, reuse, and refurbishment of the equipment for Crystal River Units 4&5 was significantly greater than other offers received.

Exhibit 2 provides a summary of the DEF decisions made for dispositioning LNP LLE through 2015.

Duke Energy Florida LNP Long Lead Equipment Disposition					
Contractor/ Equipment	Disposition Date	Original Cost	Paid	Settled Cost	Disposition Decision
Mangiarotti- various equipment components in grouping	11/7/13	██████████	██████████	██████████	Settlement minimized ongoing costs
Tioga-Cooling Loop Piping	1/09/14	██████████	██████████	██████████	Settlement minimized ongoing costs
Doosan-Steam Generators	11/18/14	██████████	██████████	██████████	Review of PO
Doosan-Reactor Vessel	11/18/14	██████████	██████████	██████████	Review of PO
Toshiba- Turbine/Generator	N/A	██████████	██████████	██████████	Litigation Claim
Westinghouse Reactor Vessel Internals	N/A	██████████	██████████	██████████	Litigation Claim
Siemens-Variable Frequency Drives	12/28/15	██████████	██████████	██████████	Internal Transfer Sale
SPX-Squib Valves	12/10/14	██████████	██████████	██████████	Purchased by outside source.
EMD-reactor coolant pumps	11/18/14	██████████	██████████	██████████	Review of PO
Total		██████████	██████████	██████████	

Exhibit 2

Source: DEF Responses to Data Request DR-1 LNP-9b

As shown in the exhibit, five LLE items remain in a pending status. Two items are pending litigation claims, and three items are pending review of purchase orders. The status of these five items will be resolved through the completion of the EPC contract litigation, and will impact final LNP project costs. The estimated completion of the trial, now scheduled to begin in October 2016, is unknown.

2.3 NRC Licensing

Under the Commission-approved settlement in Docket No. 130208-EI, DEF agreed to continue its efforts to obtain the Levy Combined Operating License (COL). Though LNP COL-related costs are not currently being recovered within the NCRC docket, the ability to recover LNP costs at a future point in time is contingent upon the issuance of the COL.

DEF confirms that Westinghouse and the AP1000 Owner's Group (APOG) have been working with each other and the NRC to effectively resolve all outstanding design and technical issues. DEF management states that the company believes the current issues will be resolved by the proposed changes to the Levy COL application. The specific design issues in question include:

- ◆ Condensate Return
- ◆ Main Control Room Dose Calculations
- ◆ Main Control Room (MCR) Heat Load
- ◆ Hydrogen Vent in containment
- ◆ Plant Monitoring System IEEE compliance

DEF finalized the wetland mitigation plan, and received U.S. Army Corp of Engineer final 404 Permit approval in December 2015. This leaves the remaining issues with the Westinghouse AP1000, and the NRC final hearing as the last obstacles to receiving the COL.

Exhibit 3 details events leading to the anticipated COL issue date of October 2016. However, the remaining dates are contingent on Westinghouse resolving open design issues for the AP1000. The NRC will not move forward on COL approval until these design issues are resolved. Therefore, the estimated schedule dates remain fluid, but most likely will not shift greatly at this time.

DEF believes the litigation issues with the EPC contract will not impact its cooperation with Westinghouse in addressing the open engineering issues. DEF believes that with the two AP1000 projects currently under construction in the United States, it is in Westinghouse's best interest to resolve the Design Certification Document issues in a timely manner. DEF states that it believes Westinghouse is working on the issues, but the responses have not always been timely.

Duke Energy Florida Levy Nuclear Project NRC COLA Review Schedule	
Environmental Review	Status
Phase 1 – Environmental Impact Statement (EIS) scoping summary report issued	Completed - May 2009
Phase 2 – Draft EIS issued to the Environmental Protection Agency (EPA)	Completed - August 2010
Phase 3 – Responses to public comments on draft EIS completed	Completed - April 2012
Phase 4 – Final EIS issued to the EPA	Completed - April 2012
Safety Review	Status
Phase A – Requests for Additional Information (RAIs) and Supplemental RAIs	Completed - March 2010
Phase B – Advanced Final Safety Evaluation Report (SER) without Open Items	Completed - September 2011
Phase C – Advisory Committee on Reactor Safeguards (ACRS) Review of Advanced Final SER	Completed - January 2012
ACRS Final Review Complete	Completed - April 2016
Phase D – Final SER	Completed - June 2016
COL Hearing and Approval	Status
Formal Hearing	Projected - July 2016
Final Order – COL	Projected - October 2016

Exhibit 3

Source: DEF Response to Data Request DR-1 LNP-1 Appendix 1

2. 4 Levy Construction Close-Out Costs

DEF management provided documents showing that wind-down expenditures were lower than estimated, and revenue from the sale of LLE assets was greater than estimated for 2015. Other wind-down costs were also slightly lower than estimated. Audit staff reviewed these costs and believes DEF’s actions supporting the project wind-down and completion are reasonable efforts to minimize total project costs, comply with contractual obligations, and meet the Commission approved stipulation.

3.0 Crystal River 3 Extended Power Uprate Project

On April 30, 2015, DEF closed out the Investment Recovery Project (IRP) for the disposition of CR3 assets, including the remaining assets from the Extended Power Uprate (EPU) project. Project wind-down costs were incurred throughout 2015 in support of the final EPU sale and internal transfer of CR3 equipment. Proceeds from the sale of EPU equipment in 2015 were offset against the EPU wind-down costs incurred and will be returned to customers. All other remaining, installed EPU equipment was abandoned in place. According to DEF, no other potential EPU sales are currently being evaluated. Future sales, if any, will be evaluated on an individual case basis by the current CR3 plant staff and Duke Energy Supply Chain.

3.1 EPU Investment Recovery Plan Execution

To manage disposition of CR3 assets, DEF initiated an Investment Recovery Project in October 2013. In making its decisions on the best course of action for disposition of assets, the IRP team used a feasible step-wise approach to disposition both EPU-related and non-EPU related items. There was a much greater volume and dollar value of non-EPU CR3 components than EPU-related items. However, to minimize costs and to ensure all asset removal activities are performed in a prudent manner to support the abandonment process, the disposition process for both EPU and non-EPU components were the same.

The CR3 IRP was governed primarily by DEF's *Conduct of CR3 Investment Recovery* and procedure and the *Investment Recovery Project Execution Plan*. To maximize the overall recovery amount, DEF's Investment Recovery Project team evaluated various approaches to marketing and the potential demand for available assets. The plan also required the company to assess any potential use for these assets within Duke Energy. As the IRP concluded in April 2015, all team members have since been released or reassigned to other parts of the company.

The IRP team's strategy was to develop an inventory of CR3 assets, assess the average unit price of each asset, categorized by type of inventory (e.g., motors, wiring, and bolts), and then develop a systematic approach to disposition of assets. The disposition of CR3 equipment was done in accordance with the latitude given to the recovery team through the investment recovery guidance procedures. Under the *Conduct of CR3 Investment Recovery* procedure, all assets were to be disposed in the following manners:

- ◆ To the greatest extent possible, utilize internal inventory transfer to the Duke Energy fleet per Duke Energy's Affiliate Asset Transfer process.
- ◆ Assets not transferred internally would be segregated and bid out. Price quotes would be obtained from distributors, other utilities, resellers, and Original Equipment Manufacturer's (OEMs) to establish the fair market value of assets
- ◆ For remaining assets, utilize auction companies for disposition at salvage or scrap value

The company completed this endeavor using a layered approach of internal notifications, inter-utility publications, targeted listed bid events and a public auction. After considering all internal transfers, the company's disposition approach evolved, starting with a listed bid approach and shifting to a public auction. The company states that both approaches yielded the same result—the ability to disposition EPU-related assets at the current market value.

3.2 EPU Project Closeout

The IRP, including EPU close out, was governed by procedure AI-9010, Conduct of CR3 Investment Recovery. The procedure provides the overall guidance for the execution of transactions for the disposal of assets from CR3, including asset pricing requirements and minimum reviews.

The last remaining stage of the EPU project close-out was the final disposition of EPU-related assets and materials, including the sale of one-of-a-kind specialized Siemens components with limited marketability. For 2015, DEF received approximately \$2.6 million in proceeds. The specifics are listed below and the proceeds were offset against EPU wind-down costs of \$0.9 million incurred in 2015.

- ◆ On May 22, 2015, a contractual agreement was entered into between DEF and Siemens, the Original Equipment Manufacturer (OEM) to buyback CR3 high pressure turbine assets and equipment. DEF received a lump sum payment for [REDACTED] (EPU portion). The original cost for these components was [REDACTED].
- ◆ On July 28, 2015 a contractual agreement was entered into between DEF and D. H. Griffin for the sale of miscellaneous low turbine parts. Proceeds from the sale of equipment to D. H. Griffin were [REDACTED]. The original purchase price is undetermined.
- ◆ On November 10, 2015 an internal transfer (sale) of the Siemens turbine blade vibration monitoring system was completed with Duke Energy Carolina. Proceeds from the sale amounted to [REDACTED].
- ◆ On January 15, 2015, DEF accounted for \$90,519 in proceeds from the 2014 auction.
- ◆ A reclass credit of \$2,533 of CR3 assets to the EPU account was recorded on April 15, 2015, in addition to net proceeds of \$77,444 resulting from an internal transfer (sale) of pipe vibration measurement equipment and a bid event sale of motors.