

**Audit Plan
for Levy Nuclear Plant Units 1 and 2
Design Change Related to the Containment
Condensate Return Pathway**

A. Background

By letter dated April 18, 2013, Progress Energy Florida, Inc. (now Duke Energy Florida), submitted a request for exemption from the AP1000 rule and a description of associated design change departure from the AP1000 Design Control Document (DCD) Revision 19 (Reference 1). The applicant determined that this design change required it to notify the Nuclear Regulatory Commission (NRC) for review of the proposed change in accordance with Interim Staff Guidance DC/COL-ISG-011, "Finalizing Licensing-basis Information." The Levy Nuclear Plant Combined License Application incorporates the AP1000 DCD by reference.

The design change modifies the interior of the containment vessel in support of the condensate return portion of the passive core cooling system. The changes involve the addition of components to tables contained in Tier 1 of the DCD and associated changes to Tier 2 tables and figures. The applicant justified this exemption from the certified design as necessary because the current generic certified design information would not achieve the underlying purpose of the rule.

The submittal includes a report developed for the AP1000 by Westinghouse Electric Company, LLC (Westinghouse) that provides a description of the change and the basis for the change. APP-GW-GLR-161, "Changes to Passive Core Cooling System Condensate Return," includes a regulatory evaluation of the updated condensate return design that addresses compliance with the applicable regulatory requirements.

The purpose of the audit is for the staff to review the supporting documentation to ensure that the proposed design changes meet NRC regulations. The expected outcome of the audit is for the staff (1) to gain a better understanding of how the design changes meet NRC regulations, (2) to develop requests for additional information in areas not adequately covered in the available documentation, and (3) to identify supplemental information that should be added to the Levy FSAR, which the staff will rely on to make its safety finding.

The staff has previously initiated an audit for this issue, which was terminated before completion because the documents were not available for staff review (Reference 2).

B. Audit Bases

This regulatory audit is based on the following:

- Title 10 *Code of Federal Regulations* (10 CFR), Part 52, Appendix D, Section VIII
- General design criteria (GDC) from Appendix A to 10 CFR Part 50
 - GDC 2, "Design bases for protection against natural phenomena"
 - GDC 4, "Environmental and dynamic effects design bases"
 - GDC 34, "Residual heat removal"
 - GDC 35, "Emergency core cooling"
 - GDC 36, "Inspection of emergency core cooling system"
- 10 CFR 50.46 and Appendix K to 10 CFR Part 50, as they relate to analysis of passive residual heat removal heat exchanger performance

Enclosure

- Standard Review Plan Section 6.2.2 “Containment Heat Removal Systems”
- DC/COL-ISG-011, “Finalizing Licensing-basis Information.”
- Standard Review Plan Section 6.3, “Emergency Core Cooling System”

C. Audit Scope or Methodology

The audit will focus on the availability and performance of the long-term, passive removal of decay heat from the RCS using the passive residual heat removal heat exchanger. The Audit Team will be reviewing APP-GW-GLR-161 and supporting documents, including:

- TR-SEE-III-12-01, “AP1000 Condensate Return Test Report”,
- APP-PXS-M3C-071, “Containment Response Analysis for the Long Term PRHR Operation”
- APP-PXS-M3C-072, “Condensate Return to IRWST for Long Term PRHR Operation”
- APP-PXS-M3C-020, “PRHR HX Sizing/Performance”
- APP-SSAR-GSC-536, “AP1000 Safe Shutdown Temperature Evaluation”
- APP-PXS-M3C-033, “Containment Floodup Volume Calculation”
- APP-PXS-M3C-034, “Containment Floodup Level”
- APP-PXS-M3C-002, “Passive Core Cooling System (PXS) Condensate Return Downspout Sizing”
- WCAP-12980, “AP600 Passive Residual Heat Removal Heat Exchanger Test Final Report”
- WCAP-14234-P, “LOFTRAN and LOFTTR2 AP600 Code Applicability Document”
- WCAP-15644, “AP1000 Code Applicability Report”

This is not a comprehensive list of documents the staff will be reviewing as part of the audit, as there may be a need to review additional data and calculations supporting the basis for these analyses.

The staff will conduct this audit in accordance with the guidance provided in NRO-REG-108, “Regulatory Audits” (Reference 3).

D. Information and Other Material Necessary for the Audit

The staff will need documents listed above and may require other supporting information during the conduct of the audit. As of December 20, 2013, the staff understands that of the documents listed in Section C, only TR-SEE-III-12-01, APP-PXS-M3C-034, WCAP-12980, WCAP-14234-P and WCAP-15644 are currently available. The remaining documents are expected to be available by January 23, 2014.

The staff also requests access to the following:

1. Preliminary drawings and routing of the proposed modifications to containment, including gutters, downspouts, drains, filters, etc.
2. The revised WGOTHIC AP1000 containment model input deck that supports APP-PXS-M3C-071.
3. Detailed schematic of the PRHR heat exchanger, including piping inlets and outlets

E. Team Assignments

The audit team includes

Harry Wagage, NRC Audit Team Lead (Containment)
Imtiaz Madni, NRC Staff (Containment)
Boyce Travis, NRC Staff (Containment)
Chris Van Wert, NRC Staff (Reactor Systems)
Timothy Drzewiecki, NRC Staff (Reactor Systems)
Jim Gilmer, NRC Staff (Reactor Systems)
Shanlai Lu, NRC Staff (Reactor Systems)
Yiu Law, NRC Staff (Mechanical Engineering)
Sardar Ahmed, NRC Staff (Mechanical Engineering)
Malcolm Patterson, NRC Staff (Probabilistic Risk Assessment)
Donald Habib, NRC Project Manager

Areas of responsibility are as follows:

No.	Area	Members
1	Containment systems	Wagage Madni Travis
2	Reactor systems	Van Wert Gilmer Drzewiecki Lu
3	Mechanical engineering	Law Ahmed
4	Probabilistic risk assessment	Patterson
5	Coordination and communications with applicant	Habib

E. Logistics

Dates: January 7, 2014 through April 25, 2014.

NRC Project Manager will inform Duke Energy Florida in advance of specifics and any changes to the audit schedule and agenda.

Location: Westinghouse Electric Company, LLC
Washington Operations
12300 Twinbrook Parkway, Suite 330
Rockville, MD 20852
Telephone: 301-881-7040/7042

F. Special Requests

NRC staff requests that Westinghouse provide:

1. a conference room for the NRC staff use
2. secure Internet access
3. telephones to support teleconferencing (i.e., with microphone and speaker)
4. as needed, telephone access to Westinghouse technical staff to answer questions related to the material subject to the audit (with reasonable notice).

G. Deliverables

Once the regulatory audit is completed, the audit team will issue an audit summary within 90 days.

H. References

1. Levy Nuclear Plant, Units 1 and 2, Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 To Address Containment Condensate Return Cooling Design, April 18, 2013 (ML13109A533)
2. "Staff Regulatory Audit Summary for Review of Levy Nuclear Plant, Units 1 and 2, Design Change Related to the Containment Condensate Return Pathway," June 19, 2013 (ML13163A304)
3. NRO-REG-108, "Regulatory Audits", April 2, 2009 (ML081910260)