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10 CFR 52, Appendix D, X.B

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

LEVY NUCLEAR PLANT, UNITS 1 AND 2
DOCKET NOS. 52-029 AND 52-030
AP1000 COMBINED LICENSE APPLICATION DEPARTURE REPORT UPDATE

Ladies and Gentlemen:

Duke Energy Florida, Inc. (DEF) submitted an application, dated July 28, 2008, for a combined license for two AP1000 passive pressurized water reactors to be located at a site in Levy County, Florida. Part 7 of the application is the "Departures and Exemption Requests."

The purpose of this letter is to provide a report describing plant-specific departures from the AP1000 Design Control Document (i.e., Departures Report), as required by 10 CFR 52, Appendix D, paragraph X.B.1 and X.B.3.b.

There are not any new departures contained in the Levy Nuclear Plant, Units 1 and 2 "Departures and Exemption Requests" identified in the most recent six-month reporting period, January 1, 2016 to June 30, 2016.

Three departures have been revised to update for RAIs:

- LNP DEP 3.2-1, PRHR Condensate Return
- LNP DEP 6.2-1, Containment Hydrogen Control System
- LNP DEP 6.4-2, MCR Load Shed

If you have any further questions, or need additional information, please contact me at (704) 382-4046.

Sincerely,

Robert Kitchen
Director
Nuclear Development Licensing

Enclosure: 1) LNP Six Months Departure Report

D094
NRO

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LNP Six Months Departure Report

Semi-Annual Departure Report
for the Period of
January 1, 2016 Ending June 30, 2016

(6 Pages including cover page)

Departure Number: 3.2-1

Title: PRHR Condensate Return

Activity Description:

Additional changes to Tier 1 Chapter 2 and FSAR Chapters.

Modifications to the Polar Crane Girder (PCG), Internal Stiffener, and Passive Core Cooling System (PXS) gutter were made. The fabrication holes at the top surface of the PCG and in the stiffener are blocked, drainage holes in the bottom of the PCG boxes are blocked, and flow communication holes between PCG boxes are added. A downspout piping network is added to collect and transport condensation from the top and interior of the PCG and the stiffener to the PXS Collection Boxes. Eight new PXS downspout screens are added at the entrance of each of the downspouts at the top of the PCG and the stiffener to prevent any larger debris from blocking the downspout piping. Visual inspection requirements to verify that the return flow to the IRWST will not be restricted by debris have been added to the Technical Specifications and Technical Specification Bases. In addition, clarification of long-term safe shutdown conditions is provided.

Summary of Evaluation:

The proposed change does not involve a significant reduction in the margin of safety. The proposed change does not reduce the redundancy or diversity of any safety-related SSCs. The proposed changes increase the amount of condensate available in the IRWST after the initiation of a design basis event compared to the design described in the AP1000 DCD Revision 19. Though the fraction of condensate returned is smaller than originally assumed, the proposed changes provide sufficient condensate return flow to maintain adequate IRWST water level for those events using the PRHR HX cooling function. While lower condensate return rates result in an earlier transition to PRHR HX uncovery, the long-term shutdown temperature evaluation results show that the PRHR HX would continue to meet its acceptance criteria.

In conclusion, based on the considerations discussed above:

1. there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner
2. such activities will be conducted in compliance with the Commission's regulations
3. approval of the change will not be inimical to the common defense and security or to the health and safety of the public

The proposed changes do not adversely affect any safety-related equipment or function, design function, radioactive material barrier or safety analysis.

Departure Number: 6.2-1

Title: Containment Hydrogen Control System

Affected DCD/FSAR Sections: Tier 1 Table 2.3.9-3, Tier 2 Subsections 6.2.4.5.1 and 19.41.7

Activity Description:

The Containment Hydrogen Control System (VLS) has a function to limit the hydrogen concentration in containment following a severe accident so that it does not result in a failure of the containment shell (DCD Subsection 6.2.4). A severe accident (considered to be a beyond design basis event) involves a major core degradation or core melt that results in hydrogen production among other effects. A severe accident involving major core degradation/core melt is not a design basis accident; however, the VLS contains design features to address this scenario. The VLS promotes hydrogen burning soon after reaching the lower flammability limit. Burning off hydrogen at lower flammability limits is intended to prevent the hydrogen from reaching high concentration levels and potential adverse effects on containment integrity. There are hydrogen igniters positioned around various areas of containment to be able to burn off hydrogen in a controlled manner to help preserve containment integrity.

Openings in the ceilings of the Passive Core Cooling System (PXS) valve/accumulator rooms A and B (identified as Rooms 11206 and 11207, respectively) communicate with the room above where the CMTs are located (Room 11300). These openings allow access for hydrogen to vent. Igniters are placed in these areas to allow the hydrogen to ignite and burn. Evolution of the AP1000 configuration moved some equipment and room layouts such that the existing VLS ITAAC and Subsections 6.2.4.5.1 and 19.41.7 wording is no longer consistent with the revised plant design. The CMT-A opening in Room 11206 was moved closer to the containment shell while the equipment hatch opening in the same room was moved farther away, and a weir was added for flood protection (not related to hydrogen venting). The CMT-B opening in Room 11207 was moved farther away from the containment shell.

The changes proposed to the DCD by this departure reflect the current vent path configuration in Rooms 11206 and 11207, and provide clarification of "primary openings" in Rooms 11206 and 11207.

The changes to the DCD addressed by Departure 6.2-1 revise Tier 1 ITAAC Table 2.3.9-3, Item 3, Acceptance Criteria iii and Tier 2 Subsections 6.2.4.5.1 and 19.41.7 to reflect the actual vent path configuration, clarify the meaning of primary openings for Rooms 11206 and 11207, identify the vent path locations will be verified by pre-operational inspection, and hydrogen released from these vent paths will not challenge the integrity of the containment shell.

Summary of Evaluation:

The proposed changes correct information in the DCD regarding the plant layout of the primary openings in Containment Rooms 11206 and 11207 that will be used to vent hydrogen; specifically, changes involve the distance between the openings and the containment shell and clarifies what is designated as a primary opening for these rooms. An analysis demonstrates ignition of hydrogen venting through these openings will not result in failure of the containment shell.

The proposed changes will not increase the frequency of occurrence of an accident, nor result in a malfunction of a structure, system or component (SSC). The proposed changes regarding the primary openings layout information to be applied to pre-operational measurements and clarification of the primary openings will not result in an accident or malfunction of an SSC. The revised hydrogen vent locations will not result in containment shell failure and as such, will not

impact a design basis limit for a fission product barrier. The updated DCD language for primary openings used for venting hydrogen is supported by analysis and does not affect resolution of an ex-vessel severe accident design feature.

Departure Evaluation:

The proposed changes correct information in the DCD regarding the plant layout of the primary openings in Containment Rooms 11206 and 11207 that will be used to vent hydrogen during a beyond design basis event (severe accident). Pre-operational measurements will verify the location of these openings, and an analysis demonstrates postulated hydrogen releases through these openings do not result in a failure of the containment shell.

The proposed changes do not adversely affect any safety-related equipment or function, design function, radioactive material barrier or safety analysis.

Departure Number: 6.4-2

Title: MCR Load Shed

Activity Description:

Additional changes to the FSAR

The AP1000 Design Control Document (DCD), Revision 19 describes a Main Control Room (MCR) Emergency Habitability System (VES) design objective of maintaining a habitable environment in the main control room envelope (MCRE) for 72 hours after VES actuation. The MCRE temperature modeling was based on a scenario with normal ac power not available and therefore, no heat contribution from normal ac powered loads. However, a more limiting event has been identified where the VES actuates, resulting in the isolation of the MCRE, without a loss of normal ac power. With normal ac power available, all equipment in the MCRE continues to generate heat, potentially raising the temperature above the human engineering design and equipment qualification guidelines for temperature that are referenced in the DCD. Also, the original MCRE temperature modeling was based on the AP600 configuration. AP1000 design evolution and finalization, which included the addition of sixteen new wall panel displays, has increased the heat load in the MCRE.

There are 4 basic changes proposed by this departure:

1. Non-essential equipment in the MCRE will be automatically de-energized by new load shedding devices.
2. TS will be modified to ensure that MCRE exterior temperatures do not exceed values assumed in supporting calculations, to ensure the quality of the air in the VES storage tanks and to ensure availability of the new VES load shedding function.
3. The EQ temperature requirement for safety related equipment in the MCRE will be increased.
4. Two valves in the VES system will be re-classified to "active" valves to facilitate offsite support following the depletion of compressed air in the VES.

Ongoing construction of the AP1000 has revealed that insulating materials on some of the exterior walls of the MCRE cannot be installed as indicated in the DCD. To compensate for the loss of insulating materials, assumptions were made in the revised MCRE heat up calculations concerning maximum initial room temperatures outside the MCRE prior to a VES actuation. These assumptions were determined to require new TS actions and surveillances addressing room temperature, the new electrical load shed function and air quality in the VES storage tanks.

Utilizing the load shedding scheme, the MCRE will remain below the MCRE's maximum habitability temperature limit for the 72 hour design basis of VES. After 72 hours, the Nuclear Island Non-Radioactive Ventilation System (VBS) can be aligned to circulate air into the MCRE from outside the plant. Based on maximum anticipated outdoor temperature, the calculated temperature in the MCRE could reach a maximum of 110°F. Therefore, a new temperature requirement of 110°F is established for EQ of safety related equipment located in the MCRE. This will ensure that equipment will operate as required.

Summary of Evaluation:

This departure adds safety related equipment to shed non-essential, non-safety related loads, increases the EQ temperature requirements for safety related equipment in the MCRE, and

provides for a connection for offsite support following depleting of VES compressed air. This departure also adds TS actions and surveillances to ensure temperature limits are not exceeded and equipment operates as designed. These changes will ensure the MCRE habitability and EQ requirement are met in the most limiting event scenario. The departure does not involve a significant reduction in the margin of safety and does not reduce the redundancy or diversity of any safety-related SSCs.

The proposed changes do not adversely affect any safety-related equipment or function, design function, radioactive material barrier or safety analysis.