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10 CFR 52.79

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
REVISED REQUEST FOR EXEMPTION REGARDING MAIN CONTROL ROOM HABITABILITY, FOR THE LEVY NUCLEAR PLANT, UNITS 1 AND 2, COMBINED LICENSE APPLICATION

References:

1) Letter from Christopher Fallon (DEF) to Nuclear Regulatory Commission (NRC), dated March 26, 2015, "Response to Request for Additional Information Letter No. 122 Related to SRP Section 6.4, Control Room Habitability", Serial: NPD-NRC-2015-003 (ML15089A193)
2) Letter from Christopher Fallon (DEF) to Nuclear Regulatory Commission (NRC), dated November 12, 2015, "Revised Response to Request for Additional Information Letter No. 122 and Letter No. 126 Related to SRP Sections 6.4, Control Room Habitability System, and 16, Technical Specifications, for the Levy Nuclear Plant, Units 1 and 2 Combined License Application", Serial: NPD-NRC-2015-049 (ML15322A009)
3) Letter from Christopher Fallon (DEF) to Nuclear Regulatory Commission (NRC), dated November 12, 2015, "Response to Request for Additional Information Letter No. 134 Related to SRP Section 16, Technical Specifications, for the Levy Nuclear Plant, Units 1 and 2 Combined License Application", Serial: NPD-NRC-2015-051 (ML15320A028)
4) Letter from Christopher Fallon (DEF) to Nuclear Regulatory Commission (NRC), dated December 22, 2015, "Revised Response to Request for Additional Information Letter No. 132 Related to SRP Section 9.4.1, Control Room Area Ventilation System, for the Levy Nuclear Plant, Units 1 and 2 Combined License Application", Serial: NPD-NRC-2015-057 (ML15358A014)
5) Letter from Christopher Fallon (DEF) to Nuclear Regulatory Commission (NRC), dated July 17, 2015, "Response to Request for Additional Information Letter No. 126 Related to SRP Sections 6.4, Control Room Habitability System, and 16, Technical Specifications, for the Levy Nuclear Plant, Units 1 and 2 Combined License Application", Serial: NPD-NRC-2015-024 (ML15201A540)

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6) Letter from Christopher Fallon (DEF) to Nuclear Regulatory Commission (NRC), dated December 11, 2015, "Updated Response to Request for Additional Information Letter No. 122 and Letter No. 126 Related to SRP Sections 6.4, Control Room Habitability System, and 16, Technical Specifications, for the Levy Nuclear Plant, Units 1 and 2 Combined License Application", Serial: NPD-NRC-2015-052 (ML15349A952)

Ladies and Gentlemen:

Duke Energy Florida, LLC (DEF) hereby submits a revised exemption request for main control room (MCR) habitability that incorporates updates for additional changes to the MCR habitability system made to address MCR habitability concerns (Reference 2 through Reference 6) for Levy Nuclear Plant Units 1 and 2 (LNP). This revision supersedes the exemption request provided in NPD-NRC-2015-003 (Reference 1). The revised exemption request is provided in Enclosure 1.

Similarly, LNP Departure 6.4-2 for MCR habitability has also been revised to incorporate the additional changes described in References 2 through 6. The associated changes to COLA Part 7 are provided in Enclosure 2 and will be included in a future update of the COLA.

If you have any further questions, or need additional information, please contact Bob Kitchen at (704) 382-4046, or me at (704) 382-9248.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on February 25, 2016.

Sincerely,

Christopher M. Fallon

Christopher M. Fallon
Vice President
Nuclear Development

Enclosures:
1. Request for Exemption Regarding Main Control Room Habitability
2. Revisions to COLA Part 7, Departures and Exemption Requests Main Control Room Habitability

cc (w/o enclosures): U.S. NRC Region II, Deputy Regional Administrator
cc (w/ enclosures): Mr. Donald Habib, U.S. NRC Project Manager

Duke Energy

Enclosure 1

Levy Nuclear Plant Units 1 and 2

Request for Exemption Regarding
Main Control Room Habitability

(13 pages including cover page)

1.0 Summary Description

The proposed changes affect the Combined License Application (COLA) concerning the safety-related Main Control Room Emergency Habitability System (VES). Because of design finalization and completion of calculations for main control room envelope (MCRE) temperature response, the following design changes to the VES are required:

1. An automatic, Class 1E, electrical load shed of some nonessential nonsafety-related equipment within the MCRE is added. Although not required, a manual load shed is added as well.

2. The descriptions of the VES and VES performance requirements are updated in the design and licensing basis to resolve inconsistencies, provide clarification, and align with the current Auxiliary Building heat-up analysis.

3. A description of the requirements for maintaining habitability of the MCRE beyond 72 hours following a design basis accident (DBA) is added to the design and licensing basis.

This exemption request proposes changes, requiring NRC approval, to plant-specific Design Control Document (DCD) Tier 1 information and generic Technical Specifications (TS).

2.0 Description of Licensing Basis Impacts

System Description

The safety-related VES provides a supply of breathable air for the main control room (MCR) occupants, maintains the MCRE as shown in DCD Figure 6.4-1 at a positive pressure with respect to the surrounding areas, and provides passive air filtration of the MCRE atmosphere, whenever ac power is not available to operate the nuclear island nonradioactive ventilation system (VBS) for more than 10 minutes or high iodine or particulate radioactivity is detected in the MCRE air supply. The VES also limits the heat-up of the MCRE, the 1E instrumentation and control (I&C) equipment rooms, and the Class 1E dc equipment rooms by using the passive heat capacity of surrounding structures.

Passive heat sinks including the walls, ceilings, and floors surrounding the MCRE (Room 12401), the 1E I&C equipment rooms (Rooms 12301, 12302, 12304, and 12305), and the Class 1E dc equipment rooms (Rooms 12201, 12202, 12203, 12204, 12205, and 12207), limit the heat-up of the rooms during the 72-hour period following a loss of the normal operating nonsafety-related VBS. The heat sinks consist primarily of the thermal mass of the concrete that makes up the ceilings and walls of these rooms. An assumption of the Auxiliary Building heat-up analysis is the initial temperature of the rooms surrounding the MCRE, the 1E I&C equipment rooms, and the Class 1E dc equipment rooms normally maintained by the VBS.

As described in DCD Tier 1 Subsection 2.2.5, the VES provides the following safety-related design functions:

a) The VES provides a 72-hour supply of breathable quality air for the occupants of the MCRE.

b) The VES maintains the MCRE pressure boundary at a positive pressure with respect to the surrounding areas. There is a discharge of air through the MCR vestibule.

c) The heat loads within the MCRE, the I&C equipment rooms, and the Class 1E dc equipment rooms are within design basis assumptions to limit the heat-up of the rooms.

d) The system provides a passive recirculation flow of MCRE air to maintain MCR dose rates below an acceptable level during VES operation.

Supporting Technical Details

Design changes for the VES are required to control the heat-up of the MCRE following VES actuation to meet the licensing basis requirements for equipment qualification and human factors engineering in the MCRE. Design finalization and completion of calculations for MCRE temperature response determined the following:

1. The temperature response of the MCRE exceeds the current licensing basis maximum within 72 hours.

2. The MCRE heat load values during operation with, and without, normal ac power sources exceed the values in the current licensing basis.

3. The MCRE heat-up profile exceeds the current licensing basis profile.

4. The MCRE temperature exceeds the equipment qualification limit for some safety-related components within 72 hours of VES actuation.

5. The MCRE temperature exceeds the equipment qualification limit for Class 1E I&C equipment in the MCRE at some time after 72 hours of VES actuation if additional actions are not taken.

6. The capability to support operation of the VES and to maintain MCRE temperature within limits after seven days of VES actuation is not clearly identified in the design.

Tier 1 changes:

1. Table 2.5.2-3 and Table 2.5.2-4 are revised to reflect the VES design changes for an automatic and manual, Class 1E, electrical load shed of some nonessential nonsafety-related equipment within the MCRE.

2. Table 2.2.5-4 is revised to update the heat loads in the MCRE, the 1E I&C equipment rooms, and the Class 1E dc equipment rooms, to reflect the VES design changes, and to reflect the initial conditions and VES performance requirements described in the current Auxiliary Building heat-up analysis.

3. Table 2.2.5-1 is revised to designate and provide requirements for valves VES-PL-V018 (Temporary Instrument Isolation Valve A) and VES-PL-V019 (Temporary Instrument Isolation Valve B) as active valves required for providing clean, breathable replenishment air to the VES for maintaining habitability of the MCRE beyond 72 hours following a DBA.

Technical Specification (TS) changes:

1. "Electrical Load De-energization" will be added to the required action verifications of Technical Specification (TS) 3.3.2, and to the Engineered Safeguards Actuation System Instrumentation of TS Table 3.3.2-1. The Bases for TS 3.3.2 will be revised to address electrical load de-energization.

2. TS 3.7.6 for the VES will be revised to add required actions for inoperability of the MCR Load Shed Panels, for the maintenance of required air temperature limits and to ensure the quality of air in the VES storage tanks. A new TS surveillance requirement (SR) 3.7.6.3 will be added to ensure that MCRE exterior temperatures do not exceed values assumed in supporting calculations. TS SR 3.7.6.6 will be revised to ensure that the air quality in the VES storage tanks will meet its design function. In addition, periodic surveillance testing of the new electrical load shed equipment will be added as TS SR 3.7.6.12. The order that the requirements are listed was changed based on the required surveillance frequency. The existing air quality surveillance was modified to include a dew point requirement. The Bases for TS 3.7.6 will be revised accordingly.

3.0 Technical Evaluation

These proposed changes do not change the VES safety-related design requirements and design functions, as described further below.

The VES design function to maintain heat loads within the MCRE within design basis assumptions to limit the heat-up of the room is met by the modified design of the VES as follows:

- Two redundant MCR Load Shed Panels (APP-VES-EP-01 and APP-VES-EP-02) containing Class 1E equipment are added to automatically or manually de-energize some nonessential nonsafety-related electrical loads in the MCRE to ensure heat loads within the MCRE are within design basis assumptions to limit the heat-up of the room.
- Automatic actuation of the MCR Load Shed Panels is added to the existing Protection and Safety Monitoring System (PMS) VES system actuation signal for VES MCRE isolation, pressurization, and filtration on a high iodine or particulate MCRE air supply radioactivity signal or a loss of all ac power for > 10 minutes signal (low Class 1E battery charger input voltage). In addition, the existing manual actuation signal for VES MCRE isolation, pressurization, and filtration is added to the MCR Load Shed Panels.
- Component interface modules (CIMs) in PMS Divisions A and C are provided to de-energize loads powered by the two MCR Load Shed Panels. Either PMS division is capable of de-energizing the two MCR Load Shed Panels. Each panel de-energizes separate nonessential nonsafety-related electrical loads from both Stage 1 and Stage 2.
- De-energized loads are separated into Stage 1 and Stage 2 to maximize the availability of the nonsafety-related wall panel information system, which is de-energized with Stage 2 loads. Timers that control the Stage 1 and Stage 2 load de-energization are internal to each MCR Load Shed Panel and actuate relays to de-energize the loads. Stage 1 loads are de-energized by both panels immediately after the timers in each panel receive the PMS VES system actuation signal. Stage 2 loads are de-energized by both panels within 180 minutes after the timers in each panel receive the PMS VES system actuation signal.

- Each MCR Load Shed Panel contains redundant load shed relays and timers actuated by the two PMS divisions such that actuation of either division de-energizes all required loads to meet single failure criterion.

In addition to the proposed change to add MCR Load Shed Panels, the design basis assumptions regarding insulating walls, ceilings, and floors surrounding the MCRE to limit the heat-up of the room by the surrounding passive heat sinks are revised in the Auxiliary Building heat-up analysis. Sensitivity studies demonstrate that this assumption has little effect on the heat-up of the MCRE. Instead, ensuring the initial average air temperature of the 1E I&C equipment rooms, the Class 1E dc equipment rooms, and other rooms that surround the MCRE, in addition to the average air temperature of 75°F for the MCRE, is critical to ensuring operability of the passive heat sinks. The heat sinks consist primarily of the thermal mass of the concrete that makes up the ceilings and walls of the room. Surrounding rooms are normally maintained at temperatures below the temperatures assumed in the Auxiliary Building heat-up analysis. To ensure that these initial conditions of the analysis are met, changes to the TS are proposed to ensure the following:

- The initial average air temperature in rooms 12201, 12202, 12203, 12204, 12205, 12207, 12300, 12301, 12302, 12303, 12304, 12305, 12313, and 12412, which includes the 1E I&C equipment rooms, the Class 1E dc equipment rooms, and other rooms that surround the MCRE, is verified to be ≤ 85°F.
- The initial average air temperature in room 12501 above the MCRE is verified to be ≤ 85°F.
- Temperature control of the other rooms adjacent to the MCRE is not required.

These changes ensure that the temperature/relative humidity values calculated during the 72 hours following a DBA equate to a Maximum Average Wet Bulb Globe Temperature index of less than 90°F. In addition, these changes ensure that heat loads in the zones containing safety-related equipment within the MCRE, the 1E I&C equipment rooms, and the Class 1E dc equipment rooms are maintained less than the limits used in qualifying the equipment for their required operating times following a DBA, in compliance with General Design Criterion (GDC) 4, as stated in the DCD.

The proposed changes to the VES, including the addition of the MCR Load Shed Panels, continue to meet the same regulatory acceptance criteria, electrical codes, and industry standards specified in the DCD. The proposed changes comply with the requirements for equipment separation, environmental qualification, and seismic qualification, as stated in the DCD. The proposed changes are consistent with the existing inspection and testing requirements, and comply with GDC 18, as stated in the DCD.

The VES design functions to provide a 72-hour supply of breathable quality air for the occupants of the MCRE, maintain the MCRE pressure boundary at a positive pressure with respect to the surrounding areas with a discharge of air through the MCR vestibule, and provide a passive recirculation flow of MCRE air to maintain MCR dose rates below an acceptable level during VES operation, remain met with the proposed changes. In addition, the proposed change to reclassify as active, existing safety-related valves for providing clean, breathable replenishment air to the VES provides a method for ensuring continuing MCRE habitability by meeting these design functions beyond 72 hours following a DBA. Therefore, the VES with the proposed changes complies with GDC 19, as stated in the DCD.

The VES with proposed changes ensures a 72-hour supply of breathable quality air for the occupants of the MCRE, maintains the MCRE pressure boundary at a positive pressure with respect to the surrounding areas with a discharge of air through the MCR vestibule, and provides a passive recirculation flow of MCRE air to maintain MCR dose rates below an acceptable level during VES operation. The VES is automatically or manually actuated to minimize unfiltered in-leakage by maintaining the MCRE at a slightly positive pressure, which protects the plant operators from accidental releases of toxic and radioactive gases. Therefore, the VES with the proposed changes continues to comply with Generic Safety Issue B-66, as stated in the DCD.

The proposed changes do not require a change to procedures or method of control that adversely affect the performance of the VES safety-related and non-safety related design functions as described in the DCD. The proposed changes to add the MCR Load Shed Panels ensure that the MCRE remains habitable following a DBA with loss of all ac power, with both automatic and manual actuation controls. The manual actions are simple steps that may be taken by the MCR operators in the event the automatic actuation fails.

The proposed changes to the design and licensing basis of the VES including addition of the MCR Load Shed Panels, updates of the design and licensing basis descriptions for the VES, and addition of the requirements for maintaining habitability of the MCRE beyond 72 hours following a DBA, do not change the VES safety-related design functions. These proposed design modifications and licensing basis updates result in the following changes to plant-specific Tier 1 DCD information:

1. Table 2.5.2-3 and Table 2.5.2-4 are revised to reflect the VES design changes for an automatic and manual, Class 1E, electrical load shed of some nonessential nonsafety-related equipment within the MCRE.

2. Table 2.2.5-4 is revised to update the heat loads in the MCRE to reflect the VES design changes, and to reflect the initial conditions and VES performance requirements described in the current Auxiliary Building heat-up analysis.

3. Table 2.2.5-1 is revised to designate and provide requirements for valves VES-PL-V018 (Temporary Instrument Isolation Valve A) and VES-PL-V019 (Temporary Instrument Isolation Valve B) as active valves required for providing clean, breathable replenishment air to the VES for maintaining habitability of the MCRE beyond 72 hours following a DBA.

As addressed in the Design Description for Subsection 2.5.2, Tables 2.5.2-3 and 2.5.2-4 identify the PMS automatically actuated engineered safety features and manually actuated features, respectively. The purpose of providing the information in these tables is to identify the information to be confirmed during construction by the Subsection 2.5.2 ITAAC in Table 2.5.2-8, that refer to the above tables.

As addressed in the Design Description for Subsection 2.2.5, Table 2.2.5-4 identifies the heat loads assumed in the Auxiliary Building heat-up analysis that ensure the VES design function to maintain heat loads within the MCRE within design basis assumptions to limit the heat-up of the room is met, and Table 2.2.5-1 identifies the safety-related components of the VES required to meet the design functions of the VES. The purpose of providing the information in these tables is to identify the information to be confirmed during construction by the Subsection 2.2.5 ITAAC in Table 2.2.5-5, that refer to the above tables.

The proposed changes to the design information presented in Tables 2.5.2-3, 2.5.2-4, 2.2.5-4, and 2.2.5-1 are at a level of detail that is consistent with the other information currently presented in these tables. As previously stated, the proposed changes neither adversely affect the ability to meet the design functions of the VES, or involve a significant decrease in the level of safety provided by the VES. The changes to information provided in the Subsections 2.5.2 and 2.2.5 Design Description tables continue to meet the DCD Section 14.3 Certified Design Material (CDM) criteria and provide the detail necessary to implement the corresponding ITAAC that address these tables.

An impact review determined that these proposed changes do not affect or require any change to the AP1000 Probabilistic Risk Assessment (PRA) presented in DCD Chapter 19, including the Fire PRA, results and insights (e.g., core damage frequency (CDF) and large release frequency (LRF)). There are no existing failures included in the PRA model, and no new postulated failures of the VES are required in the PRA model. Therefore, there are no changes required to initiating event frequencies and system logic models of the PRA. The existing PRA risk significance investment protection determination for VES is not affected.

The post-accident monitoring (PAM) parameters are revised to add the status of the MCR Load Shed Panels as shown in DCD Table 7.5-1. This ensures that the MCR operators have the capability to monitor the status of the de-energization of the MCR loads following a DBA in order to take manual actions if necessary to ensure continued habitability of the MCRE.

There are no fire area or radiation zone changes required because of these proposed changes. The MCR Load Shed Panels are made of non-combustible materials, and are located in rooms that contain no radioactive materials.

As described in the fire protection analysis in DCD Appendix 9A, MCRE habitability is not a required function in the event of a fire. As described in the fire protection analysis, if the fire occurs in the main control room, control may be transferred to the remote shutdown workstation, depending on the extent of the fire. Therefore, a fire which affects either MCR Load Shed Panel during a loss of offsite power may require the operators to shut down the plant from the remote shutdown workstation since not all MCRE loads will be automatically shed (if a hot short of the panels is assumed). Therefore, there is no impact on the fire protection analysis and no impact on the capability of the operators to shut down the plant in the event of a fire affecting the MCR Load Shed Panels.

The Design Reliability Assurance Program (D-RAP) identifies all "Risk-Significant SSCs within the Scope of D-RAP" in DCD Table 17.4-1. The proposed changes do not require revision of the table.

- VBS SSCs are included in the table as risk-significant, but are not changed.
- No VES SSCs are included in the table and the changes to VES do not meet the criteria to be designated as risk-significant.

- The new MCR Load Shed Panels are part of PMS, but do not meet the criteria to be designated as risk-significant.

The VES provides no Defense-in-Depth (DID) (Investment Protection) function.

The proposed changes do not affect the containment, control, channeling, monitoring, processing or releasing of radioactive and non-radioactive materials. No effluent release path is affected. The types and quantities of expected effluents are not changed. Therefore, radioactive or non-radioactive material effluents are not affected.

The proposed changes do not affect plant radiation zones, controls under 10 CFR 20, and expected amounts and types of radioactive materials. Therefore, individual and cumulative radiation exposures do not change.

Summary

Although there are plant-specific DCD Tier 1 and generic TS changes, the resulting reduction in standardization caused by these changes does not cause a decrease in safety.

The proposed changes ensure the VES design functions to maintain heat loads within the MCRE within design basis assumptions to limit the heat-up of the room, and to ensure a 72-hour supply of breathable quality air for the occupants of the MCRE, maintain the MCRE pressure boundary at a positive pressure with respect to the surrounding areas with a discharge of air through the MCR vestibule, and provide a passive recirculation flow of MCRE air to maintain MCR dose rates below an acceptable level during VES operation, are met. The proposed changes include the following design and licensing basis changes for the VES:

1. An automatic and manual, Class 1E, electrical load shed of some nonessential nonsafety-related equipment within the MCRE is added.

2. The descriptions of the VES and VES performance requirements are updated in the design and licensing basis to resolve inconsistencies, provide clarification, and align with the current Auxiliary Building heat-up analysis.

3. A description of the requirements for maintaining habitability of the MCRE beyond 72 hours following a DBA is added to the design and licensing basis.

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

4.0 Regulatory Evaluation

4.1 Exemption Justification

Pursuant to 10 CFR §52.63(b)(1), an exemption from 10 CFR Part 52, Appendix D, Section III.B. requirements is requested. According to 10 CFR Part 52, Appendix D, Section VIII.A.4, 10 CFR §50.12, 10 CFR §52.7 and 10 CFR §52.63, the NRC may grant exemptions from the requirements of the regulations provided the following six conditions are met: 1) the exemption is authorized by law [§50.12(a)(1)]; 2) the exemption will not present an undue risk to the health and safety of the public [§50.12(a)(1)]; 3) the exemption is consistent with the common defense and security [§50.12(a)(1)]; 4) special circumstances are present [§50.12(a)(2)]; 5) the special circumstances outweigh any decrease in safety that may result

from the reduction in standardization caused by the exemption [§52.63(b)(1)]; and 6) the design change will not result in a significant decrease in the level of safety [Part 52, Appendix D, VIII.A.4]. The requested exemption satisfies the criteria for granting specific exemptions, as described below.

4.1.1 This exemption is authorized by law.

The NRC has authority under 10 CFR §§ 50.12, 52.7, and 52.63 to grant exemptions from the requirements of NRC regulations. Specifically, 10 CFR §§50.12 and 52.7 state that the NRC may grant exemptions from the requirements of 10 CFR Part 52 upon a proper showing. No law exists that would preclude the changes covered by this exemption request. Additionally, granting of the proposed exemption does not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations. Accordingly, this requested exemption is "authorized by law," as required by 10 CFR §50.12(a)(1).

4.1.2. This exemption will not present an undue risk to the health and safety of the public.

The proposed exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would allow changes to elements of the plant-specific DCD Tier 1 design information and generic TS. The plant-specific Tier 1 DCD will continue to reflect the approved licensing basis for the applicant, and will maintain a consistent level of detail with that which is currently provided elsewhere in Tier 1 of the plant-specific DCD. Because the change to the VES system description and associated TS changes maintain VES design functions, the changed design will ensure the protection of the health and safety of the public.

Therefore, no adverse safety impact which would present any additional risk to the health and safety of the public is present. The affected Design Description in the plant-specific Tier 1 DCD will continue to provide the detail necessary to support the performance of the associated ITAAC. Therefore, the requested exemption from 10 CFR 52, Appendix D, Section III.B would not present an undue risk to the health and safety of the public.

4.1.3 The exemption is consistent with the common defense and security.

The exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would change elements of the plant-specific DCD Tier 1 design information relating to the operation of the VES and the generic TS. The exemption does not alter the design, function, or operation of any structures or plant equipment that are necessary to maintain a secure status of the plant. The proposed exemption has no impact on plant security or safeguards procedures. Therefore, the requested exemption is consistent with the common defense and security.

4.1.4 Special circumstances are present.

10 CFR §50.12(a)(2) lists six "special circumstances" for which an exemption may be granted. Pursuant to the regulation, it is necessary for one of these special circumstances to be present in order for the NRC to consider granting an exemption request. The requested exemption meets the special circumstances of 10 CFR §50.12(a)(2)(ii). That Section defines special circumstances as when "Application of

the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule."

The rule under consideration in this request for exemption from Tier 1 Subsections 2.2.5 and 2.5.2, and the generic TS is 10 CFR 52, Appendix D, Section III.B, which requires that an applicant referencing the AP1000 Design Certification Rule (10 CFR Part 52, Appendix D) shall incorporate by reference and comply with the requirements of Appendix D, including Tier 1 information and generic TS. The Levy Units 1 and 2 COLA references the AP1000 Design Certification Rule and incorporates by reference the requirements of 10 CFR Part 52, Appendix D, including Tier 1 information and generic TS. The underlying purpose of Appendix D, Section III.B is to describe and define the scope and contents of the AP1000 design certification, and to require compliance with the design certification information in Appendix D to maintain the level of safety in the design.

The proposed changes maintain the design functions of the VES. This change does not impact the ability of any structures, systems, or components to perform their functions or negatively impact safety. Accordingly, this exemption from the certification information in Tier 1 Subsections 2.2.5 and 2.5.2 and from generic TS will enable the applicant to safely construct and operate the AP1000 facility consistent with the design certified by the NRC in 10 CFR 52, Appendix D.

Therefore, special circumstances are present, because application of the current generic certified design information in Tier 1 and the generic TS as required by 10 CFR Part 52, Appendix D, Section III.B, in the particular circumstances discussed in this request is not necessary to achieve the underlying purpose of the rule.

4.1.5 The special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption.

Based on the nature of the changes to the plant-specific DCD Tier 1 information and generic TS and the understanding that these changes support the design function of the VES, it is likely that other AP1000 applicants and licensees will request this exemption. However, if this is not the case, the special circumstances continue to outweigh any decrease in safety from the reduction in standardization because the key design functions of the VES associated with this request will continue to be maintained. This exemption request and the associated DCD and TS changes demonstrate that the VES function continues to be maintained following implementation of the change from the generic AP1000 DCD, thereby minimizing the safety impact resulting from any reduction in standardization.

Therefore, the special circumstances associated with the requested exemption outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption. In fact, as described in 4.1.6 below, the exemption will not result in a reduction in the level of safety.

4.1.6 The design change will not result in a significant decrease in the level of safety.

The exemption revises the plant-specific DCD Tier 1 information by enabling the VES to more effectively perform its design functions. This exemption also revises the generic TS to ensure equipment operability and temperature conditions are

maintained. Because the VES design functions are met, there is no reduction in the level of safety.

Therefore, the design change and change to the TS will not result in a significant decrease in the level of safety.

As demonstrated above, this exemption request satisfies NRC requirements for an exemption to the design certification rule for the AP1000.

4.2 Significant Hazards Consideration

The proposed changes revise the COLA because of design changes to the VES. Because of design finalization and completion of calculations for MCRE temperature response: 1) an automatic and manual, Class 1E, electrical load shed of some nonessential nonsafety-related equipment within the MCRE is added; 2) the descriptions of the VES and VES performance requirements are updated in the design and licensing basis to resolve inconsistencies, provide clarification, and align with the current Auxiliary Building heat-up analysis; and 3) a description of the requirements for maintaining habitability of the MCRE beyond 72 hours following a DBA is added to the design and licensing basis. This activity involves departures from plant-specific DCD Tier 1 information and changes to generic TS.

Whether or not a significant hazards consideration is involved with the proposed exemption was determined by evaluating the three criteria set forth in 10 CFR 50.92, as discussed below:

4.2.1 Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

The proposed changes do not affect the operation of any systems or equipment that initiate an analyzed accident or alter any structures, systems, and components (SSC) accident initiator or initiating sequence of events. The VES design changes involve: 1) addition of an automatic and manual, Class 1E, electrical load shed of some nonessential nonsafety-related equipment within the MCRE; 2) updating the descriptions of the VES and VES performance requirements in the design and licensing basis to resolve inconsistencies, provide clarification, and align with the current Auxiliary Building heat-up analysis; and 3) adding a description of the requirements for maintaining habitability of the MCRE beyond 72 hours following a DBA to the design and licensing basis. Neither planned or inadvertent operation nor failure of the VES is an accident initiator or part of an initiating sequence of events for an accident previously evaluated. The proposed changes do not have an adverse impact on the ability of the VES to perform its design functions. The design of the VES continues to meet the same regulatory acceptance criteria, codes, and standards as referenced in the DCD. In addition, the changes ensure that the capability of the VES to mitigate the consequences of an accident meets the applicable regulatory acceptance criteria, and there is no adverse effect on any safety-related SSC or function used to mitigate an accident. The changes do not affect the prevention and mitigation of other abnormal events, e.g., anticipated operational occurrences, earthquakes, floods and turbine missiles, or their safety or design analyses. Therefore, the probability or consequences of an accident previously evaluated are not affected.

4.2.2 Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed changes do not affect the operation of any systems or equipment that may initiate a new or different kind of accident, or alter any SSC such that a new accident initiator or initiating sequence of events is created. The VES design changes involve: 1) addition of an automatic and manual, Class 1E, electrical load shed of some nonessential nonsafety-related equipment within the MCRE; 2) updating the descriptions of the VES and VES performance requirements in the design and licensing basis to resolve inconsistencies, provide clarification, and align with the current Auxiliary Building heat-up analysis; and 3) adding a description of the requirements for maintaining habitability of the MCRE beyond 72 hours following a DBA to the design and licensing basis. Although a new failure mode of the VES is created by the addition of the MCR Load Shed Panels, neither planned nor inadvertent operation nor failure of the VES is an accident initiator or part of an initiating sequence of events for a new or different kind of accident. In addition, these proposed changes do not adversely affect any other VES or SSC design functions or methods of operation in a manner that results in a new failure mode, malfunction, or sequence of events that affect safety-related or non-safety-related equipment. Therefore, this activity does not allow for a new fission product release path, result in a new fission product barrier failure mode, or create a new sequence of events that result in significant fuel cladding failures. Thus, the proposed changes do not create the possibility of a new or different kind of accident from any previously evaluated.

4.2.3 Does the proposed change involve a significant reduction in a margin of safety?

The proposed changes maintain existing safety margins. The proposed changes ensure that VES design requirements and design functions are met. The proposed changes maintain existing safety margin through continued application of the existing requirements of the DCD, while adding additional design features and controls to ensure the VES performs the design functions required to meet the existing safety margins. Therefore, the proposed changes satisfy the same design functions in accordance with the same codes and standards as stated in the DCD. These changes do not adversely affect any design code, function, design analysis, safety analysis input or result, or design/safety margin. Because no safety analysis or design basis acceptance limit/criterion is challenged or exceeded by these changes, no margin of safety is reduced. Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Having arrived at negative declarations with regard to the criteria of 10 CFR 50.92, this assessment determined that the requested change does not involve a Significant Hazards Consideration.

4.3 Applicable Regulatory Requirements/Criteria

10 CFR 52, Appendix D, Section VIII.B.5.a allows an applicant who references this appendix to depart from Tier 2 information, without prior NRC approval, unless the proposed departure involves a change to or departure from Tier 1 information, Tier 2* information, or the generic TS. This exemption request proposes changes to plant-specific DCD Tier 1 information and generic TS.

10 CFR 50 Appendix A, General Design Criteria 4, *Environmental and dynamic effects design bases*, states: "Structures, systems, and components important to safety shall be designed to accommodate the effects of and to be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss-of-coolant accidents." The proposed changes ensure that heat loads in the zones containing safety-related equipment within the MCRE, the 1E I&C equipment rooms, and the Class 1E dc equipment rooms are maintained less than the limits used in qualifying the equipment for their required operating times following a DBA. Therefore, this criterion remains satisfied.

10 CFR 50 Appendix A, General Design Criteria 18, *Inspection and testing of electric power systems*, states: "Electric power systems important to safety shall be designed to permit appropriate periodic inspections and testing of important areas and features, such as wiring, insulation, connections, and switchboards, to assess the continuity of the systems and the condition of their components. The systems shall be designed with a capability to test periodically (1) the operability and functional performance of the components of the systems, such as onsite power sources, relays, switches, and buses, and (2) the operability of the systems as a whole and, under conditions as close to design as practical, the full operation sequence that brings the systems into operation, including operation of applicable portions of the protection system." The proposed changes to the VES, including the addition of the MCR Load Shed Panels, continues to meet the same regulatory acceptance criteria, electrical codes, and industry standards specified in the DCD, and the inspection and testing requirements (e.g., IEEE-338, Regulatory Guide 1.41, and Regulatory Guide 1.118) are still met for the VES with the proposed changes. Therefore, this criterion remains satisfied.

10 CFR 50 Appendix A, General Design Criteria 19, *Control room*, states: "A control room shall be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions, including loss-of-coolant accidents. Adequate radiation protection shall be provided to permit access and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 0.05 Sv (5 rem) total effective dose equivalent (TEDE) as defined in § 50.2 for the duration of the accident." The VES with proposed changes do not result in a change to the radiological dose rates to the MCR operators for the duration of a DBA, and the MCRE remains habitable for the duration of a DBA. Therefore, this criterion remains satisfied.

Generic Safety Issue B-66 addresses the adequacy of control room area ventilation systems and control building layout to ensure that plant operators are adequately protected against the effects of accidental releases of toxic and radioactive gases. The VES with proposed changes ensure a 72-hour supply of breathable quality air for the occupants of the MCRE, maintain the MCRE pressure boundary at a positive pressure with respect to the surrounding areas with a discharge of air through the MCR vestibule, and provide a passive recirculation flow of MCRE air to maintain MCR dose rates below an acceptable level during VES operation. The VES is automatically or manually actuated to minimize unfiltered in-leakage by maintaining the MCRE at a slightly positive pressure, which protects the plant operators from accidental releases of toxic and radioactive gases. Therefore, this regulatory guidance remains satisfied.

Duke Energy

Enclosure 2

Levy Nuclear Plant Units 1 and 2

Revisions to COLA Part 7, Departures and Exemption Requests
Main Control Room Habitability

(4 pages including cover page)

1. COLA Part 7, Departures and Exemption Requests, departure 6.4-2 is revised as follows:

Departure Number LNP DEP 6.4-2:

Affected DCD/FSAR Sections: Tier 1 Tables 2.2.5-1, 2.2.5-4, 2.5.2-3, 2.5.2-4
Tier 2 Table 3.7.3-1 (Sheets 1 and 2 of 3), Table 3.9-12 (Sheet 6 of 7), Table 3.9-16 (Sheet 23 of 26), Table 3.9-17, Table 3.11-1 (Sheets 17, 30 and 47 of 51), Figure 3D.5-1 (Sheet 1 of 3), Table 3I.6-2 (Sheet 11 of 28), Table 3I.6-3 (Sheets 10 and 28 of 32), Subsections 6.4.2.2, 6.4.2.3, 6.4.3.2, 6.4.4, 6.4.5.1, 6.4.5.3 and 6.4.8, Table 6.4-3, Figure 7.2-1 (Sheet 13 of 21), Subsection 7.3.1.2.17, Table 7.3-1 (Sheet 7 of 9), Table 7.3-3 (Sheet 2 of 2), Table 7.5-1 (Sheet 11 of 12), Table 7.5-7 (Sheet 4 of 4), Subsections 9.3.1.1.2, 9.4.1.1.2, 9.4.1.2.3.1 and 14.2.9.1.6, Table 14.3-7 (Sheet 1 of 3), TS 3.3.2, TS 3.7.6, TS B 3.3.2, TS B 3.7.6, TS Figure B 3.7.6-2.

Summary of Departure:

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.

In order to address these issues, a departure from information presented in the generic DCD is necessary. This departure makes several changes to ensure that the VES can perform its design functions. These changes consist of adding load shedding devices, raising equipment qualification (EQ) temperature requirements, revising Technical Specifications (TS) and reclassifying VES components. These changes will make the VES system more robust and will ensure that habitability and EQ requirements are met in the most limiting event scenario.

Scope/Extent of Departure:

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.

Change 1 - Load Shedding:
To compensate for the increased heat loads, new load shedding equipment will be added to automatically shed non-essential, non-safety related loads, beginning upon actuation of VES. The new load shedding equipment is safety related and designed with the requisite redundancy, separation, isolation, and equipment qualification requirements. With these non-essential, non- safety related loads shed as described, the temperature modeling concludes that the 72 hour VES design objective for habitability will be met. However, even with the load shedding, the heat generation rate for the AP1000 design is greater than originally assumed, so values included in AP1000 DCD Tier 1 and Tier 2 tables will be revised.

Change 2 - TS Changes:
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.

Change 3: Equipment Qualification Temperature Requirement:
Utilizing the load shedding scheme described in Change 1, 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.

Change 4: Two Valves Reclassified:
The capability of offsite support is expanded by reclassifying two VES manual valves. These valves are to be changed from "non-active" valves to "active" valves in order to maintain open and close capabilities following design basis accidents. With this re-classification, these manually operated valves provide a connection for offsite support during the post 72 hour operation of VES. Changing the classification impacts a Tier 1 table in the DCD.

Departure Justification:

The proposed changes do not involve a significant reduction in the margin of safety. The proposed changes do not reduce the redundancy or diversity of any safety-related structures, systems or components (SSCs). The proposed changes ensure that the VES system can perform its design functions including maintaining an environment suitable for MCRE habitability and EQ.

Based on these considerations: (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, and

(3) approval of the change will not be inimical to the common defense and security or to the health and safety of the public.

Departure 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 that equipment operates as designed. These changes will ensure that 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. Therefore, this departure does not:

1. Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the plant-specific DCD.
2. Result in more than a minimal increase in the likelihood of occurrence of a malfunction of an SSC important to safety and previously evaluated in the plant-specific DCD.
3. Result in more than a minimal increase in the consequences of an accident previously evaluated in the plant-specific DCD.
4. Result in more than a minimal increase in the consequences of a malfunction of an SSC important to safety previously evaluated in the plant-specific DCD.
5. Create a possibility for an accident of a different type than any evaluated previously in the plant-specific DCD.
6. Create a possibility for a malfunction of an SSC important to safety with a different result than any evaluated previously in the plant-specific DCD.
7. Result in a design basis limit for a fission product barrier as described in the plant-specific DCD being exceeded or altered.
8. Result in a departure from a method of evaluation described in the plant-specific DCD used in establishing the design bases or in the safety analyses.

This departure does not affect resolution of a severe accident issue identified in the plant- specific DCD. Therefore, this departure has no safety significance.

NRC Approval Requirement:

This departure requires an exemption from the requirements of 10 CFR Part 52, Appendix D, Section III.B, which requires compliance with Tier 1 requirements of the AP1000 DCD and the generic Technical Specifications. Therefore, an exemption is requested in Part B of this COL Application Part.