

## LevyCountyRAIsPEm Resource

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**From:** Habib, Donald  
**Sent:** Wednesday, May 13, 2015 11:14 AM  
**To:** LevyCountyRAIsPEm Resource  
**Subject:** RAI No. 126 Related to SRP Sections 6.4, Control Room Habitability Systems, and 16, Technical Specifications, for the Levy Nuclear Plant Units 1 and 2 COL  
**Attachments:** 2015-05-13 RAI Letter 126 for MCR Heatup SBPB and SCVB.docx

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**Subject:** RAI No. 126 Related to SRP Sections 6.4, Control Room Habitability Systems, and 16, Technical Specifications, for the Levy Nuclear Plant Units 1 and 2 COL  
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**From:** Habib, Donald

**Created By:** Donald.Habib@nrc.gov

**Recipients:**  
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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

May 13, 2015

Mr. Christopher M. Fallon  
Vice President, Nuclear Development  
Duke Energy Florida, Inc.  
P.O. Box 1006 – EC12L  
Charlotte, NC 28201-1006

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 126 RELATED  
TO STANDARD REVIEW PLAN SECTION 6.4, CONTROL ROOM  
HABITABILITY, AND SECTION 16, TECHNICAL SPECIFICATIONS, FOR THE  
LEVY NUCLEAR PLANT, UNITS 1 AND 2, COMBINED LICENSE APPLICATION

Dear Mr. Fallon:

By letter dated July 28, 2008, as supplemented by a letter dated September 12, 2008, Progress Energy Florida, Inc., now Duke Energy Florida, submitted its application to the U. S. Nuclear Regulatory Commission (NRC) for a combined license (COL) for two AP1000 advanced passive pressurized water reactors pursuant to 10 CFR Part 52. The NRC staff is performing a detailed review of this application to enable the staff to reach a conclusion on the safety of the proposed application.

The NRC staff has identified that additional information is needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the enclosure to this letter.

To support the review schedule, you are requested to respond within 30 days of the date of this letter. If changes are needed to the final safety analysis report, the staff requests that the RAI response include the proposed wording changes.

C. Fallon

If you have any questions or comments concerning this matter, you may contact me at 301-415-1035.

Sincerely,

Donald Habib, Project Manager  
Licensing Branch 4  
Division of New Reactor Licensing  
Office of New Reactors

Docket Nos. 52-029  
52-030

eRAI Tracking Nos. 7843 and 7863

Enclosures:  
Requests for Additional Information

C. Fallon

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Sincerely,

Donald Habib, Project Manager  
Licensing Branch 4  
Division of New Reactor Licensing  
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Docket Nos. 52-029  
52-030

eRAI Tracking Nos. 7843 and 7863

Enclosures:  
Requests for Additional Information

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\*Approval captured electronically in the electronic RAI system.

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## Request for Additional Information Letter No. 126 (7843)

Issue Date: 05/13/2015

Application Title: Levy County, Units 1 and 2 - Dockets 52-029 and 52-030

Operating Company: Duke Energy Florida

Review Section: 06.04 - Control Room Habitability System

Application Section: 06.04 - Habitability Systems

### QUESTIONS

06.04-5

Table 16.3.2 of the FSAR specifies Short Term Availability Controls (AC) 2.6 for long term cooling of the main control room (MCR). AC 2.6 specifies availability controls and surveillance requirements for the non-safety related MCR ancillary fans. As discussed in the Bases for the AC, the MCR ancillary fans are used to circulate ambient air through the MCR to provide cooling after 3 days following an accident. On page 8 of Enclosure 4 with your letter dated March 26, 2015 (Serial No. NPD-NRC-2015-003) you propose adding a new section (9.4.1.2.3.1) to the FSAR which states that the limits on temperature and humidity for which MCR ancillary fans must operate are shown in Figure 3D.5-1. Currently, Figure 3D.5-1 is incorporated into the FSAR by reference to the certified AP1000 design with no departures or supplements. However, it is stated on page 3 of Enclosure 4 with your letter dated March 26, 2015 (Serial No. NPD-NRC-2015-003) that FSAR Appendix 3D will be revised to add a departure from the certified design in which Figure 3D.5-1 is replaced by Figure 3D-201 (provided in Enclosure 4 to the above referenced letter) that contains revised limits on temperature and humidity for which MCR ancillary fans must operate. These two proposed changes to the FSAR are not consistent. Please clarify the temperature and humidity limits you are proposing for the MCR ancillary fans (those in Figure 3D.5-1 or those in Figure 3D-201).

The limits shown in Figure 3D-201 suggest that MCR conditions in the Post-72 period following an accident could reach 115°F dry bulb temperature with 35% relative humidity (RH). In this regard, please provide the following and include a reference to this information:

1. The analysis which shows maximum expected temperature and RH conditions in the MCR in the Post-72 period following an accident, including the assumed heat load and a description of the calculational model (including methods and assumptions)
2. The estimated stay time in the control room for operators to perform light work for the bounding temperature and humidity conditions and the technical bases for the estimate.

## Request for Additional Information Letter No. 126 (7863)

Issue Date: 05/13/2015

Application Title: Levy County, Units 1 and 2 - Dockets 52-029 and 52-030

Operating Company: Duke Energy Florida

Review Section: 16 - Technical Specifications

Application Section: COLA Part 4, TS 3.7.6 and Bases

### QUESTIONS

16-3

10 CFR 50.36, "Technical Specifications;" and 10 CFR 52.97, "Issuance of Combined Licenses;" and Section VIII.B.5.a of Appendix D, "Design Certification of AP1000 Design," provide the regulatory basis for the following questions. 10 CFR 50.36 sets forth requirements for technical specifications to be included as part of the operating license for a nuclear power facility. Subsection 52.97(a)(1) applies because the Commission must have sufficient information to find that applicable NRC regulations have been met. Section VIII.B.5.a of Appendix D to 10 CFR Part 52 applies as it relates to controls of changes to the generic technical specifications.

NUREG-1431, "Standard Technical Specifications Westinghouse Plants," provides NRC guidance on format and content of technical specifications as one acceptable means to meet 10 CFR 50.36 requirements.

In the response to RAI 122, Question 06.04-4, in its letter dated March 26, 2015, Duke Energy Florida proposed a change to the design of the main control room emergency habitability system (VES) to address the main control room (MCR) heat-up issue that was identified by Westinghouse and communicated to the staff at a public meeting held on July 23, 2014 (see ML14192A803 and ML14220A113). The proposed VES design change includes adding two new load-shed panels which will automatically de-energize selected non-Class 1E loads in the main control room envelope in conjunction with the actuation of the VES safety function.

As part of this design change, the applicant proposed to revise TS 3.7.6, "Main Control Room Emergency Habitability System," and its associated Bases. The staff requests clarification of the following proposed changes or an explanation as to why the changes are not necessary, as appropriate:

1. The applicant proposed new Condition B, which states "One or more MCR load-shed panel(s) inoperable with load-shed function maintained," with Required Action B.1, which states "Restore MCR load-shed panel(s) to OPERABLE status" with a Completion Time of 7 days.

Staff found that proposed Condition B and the proposed Bases discussion of Required Action B.1 are not consistent with guidance of NUREG-1431. Specifically, the level of degradation of redundant equipment within a load-shed panel or among load-shed panels should be clearly and fully described in the Bases for Required Action B.1. The applicant is requested to explain how the proposed design allows one or more MCR load-shed panel(s) to be inoperable while still maintaining the automatic load-shed function, including the various specific component failures which can make a load-shed panel inoperable. The applicant is requested to revise the Bases to describe how the automatic load-shed function can be maintained with two load-shed panels inoperable, and make appropriate changes to Condition B to exclude this case if the function cannot be maintained. In that case, the condition should be addressed by Condition G or H (as

renumbered) depending on the operational Mode of the unit at the time. It should be noted that failure of related VES actuation instrumentation is addressed in TS 3.3.2, "ESFAS Instrumentation," Table 3.3.2-1, Function 20, "Main Control Room Isolation and Air Supply Initiation," Function 25, "ESF Logic," and Function 26, "ESF Actuation."

2. The applicant proposed new Condition D, which states "One or more required air temperature limits not maintained," with Required Action D.1, which states "Restore required air temperature to within limits" with a Completion Time of 24 hours.

The applicant is requested to rephrase proposed Condition D for clarity, and also for consistency with Condition C (as renumbered), which states, "MCRE air temperature not within limit," as follows: "One or more specified rooms with air temperature not within limit." The applicant is also requested to rephrase proposed Required Action D.1 for clarity, and also for consistency with Required Action C.1 (as renumbered), which states, "Restore MCRE air temperature to within limit," as follows: "Restore air temperature of affected specified rooms to within limit." For consistency with proposed new SR 3.7.6.3 and SR 3.7.6.4, which specify "average air temperature," the applicant is also requested to replace "air temperature" with "average air temperature" in Conditions C and D, and Required Actions C.1 and D.1.

3. The applicant proposed new SR 3.7.6.3, which states "Verify the average air temperature of rooms 12201, 12202, 12203, 12204, 12205, 12207, 12300, 12301, 12302, 12303, 12304, 12305, 12313, and 12412 is  $\leq 85^{\circ}\text{F}$ " with a Frequency of 24 hours.

The staff noted that rooms 12201, 12202, 12203, 12204, 12205, and 12207 are on a floor which is not adjacent to the MCRE (Room 12401). The applicant is requested to explain why these rooms are included in SR 3.7.6.3.

4. The applicant proposed adding a sixth paragraph to the "Background" section in the Bases for TS 3.7.6, which states "The initial air average temperature in rooms 12201, 12202, 12203, 12204, 12205, 12207, 12300, 12301, 12302, 12303, 12304, 12305, 12313, and 123412 which surround the MCRE is assumed to be  $\leq 85^{\circ}\text{F}$ . The initial air average temperature in room 12501 is also assumed to be  $\leq 85^{\circ}\text{F}$ . Temperature control of the other rooms adjacent to the MCRE is not required."

The applicant is requested to identify those other rooms adjacent to the MCRE where it asserts that no control of average air temperature is needed to support VES operability, and provide the technical basis for this assertion that justifies not including them in proposed SR 3.7.6.3.

The applicant is also requested to replace the phrase "air average temperature" with "average air temperature" throughout the Bases, for consistency with phrasing used elsewhere in the proposed plant-specific TS and Bases.

The applicant is also requested to further revise the above quoted proposed new sixth paragraph as shown by the following markup; where "{...}" indicates that the applicant should provide additional information:

The initial average **air** temperature in rooms which surround the MCRE is assumed to be  $\leq 85^{\circ}\text{F}$ . **The numerical designators of these rooms are 12201, 12202, 12203, 12204, 12205, 12207, 12300, 12301, 12302, 12303, 12304, 12305, 12313, and 12412.** The initial average **air** temperature in room 12501 is also assumed to be  $\leq 85^{\circ}\text{F}$ . Temperature control of the other rooms



adjacent to the MCRE is not required **because {...}**. **The numerical designators of these rooms are {...}**.

5. The applicant proposed revising the Bases for SR 3.7.6.1 to suggest the use of continuously-monitored temperature in the return-air duct during the conduct of SR activities.

The staff noted that the term “average” is not used in SR 3.7.6.1 for the MCRE air temperature, and the MCRE (Room 12401) consists of four different individual rooms with doors. The applicant is requested to revise the Bases to explain how the average air temperature is determined for the MCRE.

The Bases for SR 3.7.6.1 state: “The surveillance limit of 75°F is the [VBS] return air temperature assumed in the VES thermal analysis.” The applicant is requested to explain why the MCRE average temperature limit, which is an indication of the heat content of the MCRE, which provides the MCR heat sink, is not used.

6. A new discussion is added to the Bases for new SR 3.7.6.3 mentioned in Item 3 above.

The applicant is requested to provide further clarification on how the average air temperature will be determined, and how the acceptance criterion of  $\leq 85^{\circ}\text{F}$  will be applied for each of the listed rooms.

7. The applicant proposed changes to the “Background” section of the Bases for TS 3.7.6 with the addition of proposed new seventh, eighth, ninth, and tenth paragraphs.

For clarity and improved operator usability, the applicant is requested to revise the seventh paragraph, as shown in the following markup, and explain in an appropriate location in the FSAR the technical basis for only requiring that the “occupied portion of the [main control] room remains within habitable limits for 72 hours” and why MCRE habitability should not require that all accessible areas in the MCRE satisfy the MCR average air temperature limits, and not just a 7-foot thick layer above the raised floor adjacent to the various operator soft control panel stations.

Non-essential, non-safety MCR heat loads are de-energized by the PMS VES actuation signal, **which is generated by the “Main Control Room Isolation, Air Supply Initiation, and Electrical Load De-energization,” ESFAS function,** to ensure that the occupied portion of the **MCR** remains within habitable limits for 72 hours.

For clarity and improved operator usability, the applicant is requested to revise the proposed new eighth and ninth paragraphs, as shown in the following markup, and make technical corrections to any of these staff proposed changes that are not accurate.

Component interface modules (CIMs) in PMS Divisions A and C are provided to **energize redundant relays in each of the two safety-related** electrical panels (APP-VES-EP-01 and APP-VES-EP-02); **energizing one relay in each panel will disconnect non-safety related electrical power to all non-safety electrical loads in the MCRE. Upon VES actuation in one PMS division, the CIM energizes the associated relay in each of the two safety-related** electrical panels. **Energizing just one relay in one panel de-**energizes non-safety loads **associated only with that panel.**

De-energized **non-safety** loads are separated into stage 1 and stage 2 to maximize the availability of the non-safety related wall panel information

system which is de-energized with stage 2 loads. Timers **and associated relays, which cause** stage 1 and stage 2 **non-safety** load de-energization, are internal to each **safety-related load shed** panel. Stage 1 loads are de-energized by both panels immediately after the timers in each panel receive the PMS VES actuation signal. Stage 2 loads are de-energized by both panels within 180 minutes after the timers in each panel receive the PMS VES actuation signal.

To ensure that the logical design of the load shed function is adequately described by the proposed new tenth paragraph, the applicant is requested to submit a logic diagram that depicts how de-energization of all MCR non-safety related loads would be accomplished, with the Class 1E Instrument and Control distribution panel for PMS Division A inoperable (i.e., de-energized), upon one channel of the Main Control Room Air Supply Iodine or Particulate Radiation – High 2 ESFAS Function exceeding its trip setpoint. The logic diagram should also be able to explain how de-energization of all MCR non-safety related loads would be accomplished with PMS I&C Division B or C inoperable.