LevyCountyRAIsPEm Resource

From: Habib, Donald
Sent: Monday, June 29, 2015 1:35 PM
To: LevyCountyRAIsPEm Resource
Subject: RAI Letter No. 128 Related to SRP Section 6.4, Control Room Habitability, for the Levy Nuclear Plant COL Application
Attachments: 2015-06-29 RAI Letter 128 for MCR Heatup COLB and SCVB.docx

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Subject: RAI Letter No. 128 Related to SRP Section 6.4, Control Room Habitability, for the Levy Nuclear Plant COL Application
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From: Habib, Donald

Created By: Donald.Habib@nrc.gov

Recipients:
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UNITED STATES
NUCLEARREGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

June 29, 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. 128 RELATED TOSTANDARD REVIEW PLAN SECTION 6.4,CONTROL ROOM HABITABILITY,FOR THE LEVY NUCLEAR PLANT, UNITS 1AND 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 waterreactors pursuant to 10 CFR Part 52. The NRC staff is performing a detailed review of thisapplication 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 thereview. The staff's request for additional information (RAI) is contained in the enclosure to thisletter.

To support the review schedule, you are requested to respond within 30 days of the date of thisletter. If changes are needed to the final safety analysis report, the staff requests that the RAIresponse 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. 7924 and 7989

Enclosures:
Requests for Additional Information

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. 7924 and 7989

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 128 (#7924)
Issue Date: 06/29/2015
Application Title: Levy County, Units 1 and 2 - Dockets 52-029 and 52-030
Operating Company: Duke Energy Florida
Review Section: 18 - Human Factors Engineering

QUESTIONS

18-2

The staff requests additional information for its analysis of main control room heat-up conditions following an accident. The staff used the assumptions in the bullet-points below as the bases for developing the numbered questions that follow. Please confirm whether the assumptions are valid and respond to the below questions; alternatively, explain why an assumption is incorrect or requested information is not necessary,

Assumptions:

- Emergency main control room (MCR) ventilation system (VES) actuates on high-2 alarm for particulate or iodine radioactivity. AC power remains available.
- VBS is not available to perform its normal cooling functions as stated in the March 26, 2015, DEF response to NRC RAI 6.4-4, Enclosure 1, page 3 of 5, paragraph 2 (ADAMS Accession No. ML15089A193).
- Phase 1 load shed occurs upon VES actuation. The plant continues to operate with MCR cooling provided by VES.
- 3 hours after VES actuation, the Phase 2 load shed actuates and the wall panel information system is de-energized.
- Between 1 and 3 hours the main control room temperature would exceed the tech spec limit of 75 degrees F. (DCD, Section 6.4.3.2: “The initial values of temperature/relative humidity in the MCR are 75°F/60 percent. At 3 hours, when the non-1E battery heat loads are exhausted, the conditions are 87.2°F/41 percent.”).
- While the MCR temperature surveillance is only required every 24 hours, knowing the temperature profile from the licensing basis operators would take conservative action to monitor MCR temperature and if it exceeds 75 degrees would initiate a shutdown to mode 3 within 6 hours in accordance with the tech spec action statement. The same action would also be taken for the surrounding rooms if their temperature exceeded 85 degrees. (Assumes that there is no ability to restore required air temperatures to within limits within 24 hours) This action would be necessitated by the need to protect the VES heat sink for response to a loss of AC power.

Questions:

1. Is it possible to get a VES actuation via the high-2 radiation signal without experiencing a plant event that would cause a plant trip? Explain why or why not. For example:
   a. Will the effects of radiation release from a neighboring nuclear unit be sufficient to initiate VES on a high-2 signal?
   b. Are there shutdown requirements for other site units that are affected by but not causing a radiation release?
   c. Are there component failures that could inappropriately initiate the high-2 signal?
2. If the answer to #1 is yes, will the unit be shutdown? Explain why or why not.
3. If the answer to #2 is yes, will the shutdown occur prior to the load shed? If not, explain the safety case for performing a plant shutdown without the wall panel information system (WPIS) when AC remains available. (For example, why is it safer to de-energize WPIS than provide modifications that provide MCR cooling from non-safety related sources.)

4. If a shutdown is NOT required,
    a. Explain the safety case for continued operation without WPIS when AC remains available. (For example why is it safer to de-energize WPIS than provide modifications that provide MCR cooling from non-safety related sources.)
    b. As described in DCD, Section 18.8 (page 18.8-1), the WPIS is credited with supporting teamwork, situational awareness, and command and control as part of the “State of the art control room" required by 10 CFR 50.34.f.2.iii. How are these functions accomplished when the WPIS is de-energized?
    c. VES actuation places the MCR in a condition with reduced lighting, increased noise levels, and restricted access to information used to manage and integrate control room actions. How do these factors affect operator performance? What actions have been taken to validate the proposed licensing basis change is acceptable from an operator performance perspective?
5. List the specific loads that will be de-energized by the phase 1 load shed.
   List the specific loads that will be de-energized by the phase 2 load shed.

Request for Additional Information 128 (#7989)
Issue Date: 06/29/2015
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

QUESTIONS

06.04-6

General Design Criteria (GDC) 19 requires that a design must include a control room 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.

Standard Review Plan (SRP) Sections 6.4.1 and 9.4.1 specify that the design is reviewed to ensure that the habitability of the main control room (MCR) area is maintained during adverse environmental occurrences, normal operation, anticipated operational occurrences, and subsequent to postulated accidents. This includes the ability of the design to maintain a suitable ambient temperature for control room personnel and equipment during normal operation, anticipated operational occurrences, and during and after postulated accidents, including the coincidental loss of offsite power.

For this site-specific departure, the AP1000 MCR heat-up GOTHIC analysis was modified to analyze a more limiting operational configuration that resulted in an increase in the maximum temperature in the MCR at 72 hours. The concrete walls, floor and ceiling of the AP1000 MCR provide a passive heat sink to remove the heat loads in the MCR. The AP1000 design includes a steel finned panel attached to the ceiling to enhance its heat-absorbing capacity.

For the staff to review and evaluate the results of the MCR heat-up GOTHIC analysis, address:

- how fouling of the steel finned panel on the MCR ceiling was accounted for in the GOTHIC analysis
- how obstructions (pipes, ducts, trays, acoustic panels, other) located below the steel finned panel were addressed in the GOTHIC analysis
- whether the FSAR will include a commitment to periodically clean or surveille the steel finned panel or whether there is margin between the expected 40 year fouling and the fouling assumed in the analysis.