Vogtle PEmails

From: Gleaves, Bill
Sent: Friday, September 22, 2017 11:31 AM
To: Chamberlain, Amy Christine
Cc: Dixon-Herrity, Jennifer; Patel, Chandu; Hoellman, Jordan; Dinh, Thinh; Dias, Antonio; Li, Chang; Roggenbrodt, William; Jung, Ian; Rivera-Varona, Aida; Green, Brian; Scheetz, Maurin; Stutzcage, Edward; Patterson, Malcolm; Vogtle PEmails
Subject: Draft RAI No.2 on Vogtle LAR-17-010 "Pipe Rupture Hazard and Flooding Analysis"
Attachments: Vogtle LAR-17-010 Request for Additional Information No 2.pdf

Ms. Chamberlain,

Attached is NRCs draft RAI on the subject. We will be available to discuss this draft RAI on the next public conference call on 9.28.17. We will be able to discuss any comments or questions that you may have on the draft RAIs during the public conference call. We look forward to finalizing these RAIs.

As a result of needing additional information, the staff review may be delayed. Please consider adding any responses to these draft RAIs (if accepted as final) to your planned Oct 5, 2017 response which may mitigate any impact of this RAI. We do understand that you are planning an additional PAR next week to request a "no objection" thereby enabling the construction of related equipment to proceed unimpeded.

Billy
William (Billy) Gleaves
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Licensing Branch 4
Office OWFN 8H17
US NRC, Office of New Reactors

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Subject: Draft RAI No.2 on Vogtle LAR-17-010 "Pipe Rupture Hazard and Flooding Analysis"
Sent Date: 9/22/2017 11:31:22 AM
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From: Gleaves, Bill

Created By: Bill.Gleaves@nrc.gov

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September 22, 2017

Request for Additional Information

Vogtle Electric Generating Plant, Units 3 and 4

License Amendment Request, LAR-17-010

"Pipe Rupture Hazard and Flooding Analysis (RP9619)"

The NRC staff considers the following information necessary to be placed on the Vogtle docket to support the SNC request and the staff evaluation.

RAI 2, Question 1, subject area: Fire Protection:

The NRC regulations in 10 CFR 50.90 state that whenever a holder of a license desires to amend the license, an application for an amendment must be filed with the Commission fully describing the changes desired, and following as far as applicable, the form prescribed for original applications. The NRC regulations in 10 CFR 52.98(c) state, in part, that if the COL references a certified design, then changes to or departures from information within the scope of the referenced design certification rule are subject to the applicable change procedures in that rule. Section VIII, Processes for Changes and Departures, in 10 CFR Part 52, Appendix D, describes the procedures for changes to Tier 1 and Tier 2 information within the scope of the AP1000 design certification.

LAR-17-010 proposes changing the motor-operated valves used for automatic refilling of the fire water storage tanks to manually-operated, lock-closed valves. No further information is provided regarding the manual refilling and the feasibility of performing these manual actions [DA1]. In a public meeting dated August 16, 2017, the licensee stated that the fire water storage tanks are equipped with low and low-low level alarms to alert operators of the need to refill the tanks. In addition, the licensee indicated that the manual valves are located in the Yard Area and accessibility can be confirmed by reviewing plant P&IDs and 3-D layout drawings. The staff, however, was not able to confirm the above information in reviewing the DCD, COL, or LAR-17-010 and its supplemental documentation provided in the electronic reading room.

The staff requests the licensee to provide additional description and information regarding the compensatory design features including the low level alarm/indication and accessibility to the manual valves to demonstrate the feasibility and reliability of the manual action and to ensure [DA1] either fire water storage tank can be refilled in 8 hours or less in accordance with 10 CFR 50.48, Fire Protection, GDC 3 – Fire Protection of Appendix A to 10 CFR 50, and Regulatory Guide 1.189, Revision 2, Fire Protection for Nuclear Power Plants.

RAI 2, Question 2, subject area: Fire Protection:

The NRC regulations in 10 CFR 50.90 state that whenever a holder of a license desires to amend the license, an application for an amendment must be filed with the Commission fully describing the changes desired, and following as far as applicable, the form prescribed for original applications. The NRC regulations in 10 CFR 52.98(c) state, in part, that if the COL references a certified design, then changes to or departures from information within the scope of the referenced design certification rule are subject to the applicable change procedures in that rule. Section VIII, Processes for Changes and Departures, in 10 CFR Part 52, Appendix D, describes the procedures for changes to Tier 1 and Tier 2 information within the scope of the AP1000 design certification.

LAR-17-010 proposes the relocation of the electric motor-driven fire pump and jockey pump from the turbine building to the yard area adjacent to the diesel-driven fire water pump. Although the licensee states that the electric motor-driven fire pump and jockey pump enclosure is separated from the diesel-driven fire water pump by at least a three-hour fire barrier, no information on the revised cable routing scheme for these electric pumps was provided to allow the staff to determine whether a localized fire in any plant area can render both fire pumps inoperable. In a public meeting dated August 16, 2017, the licensee provided that DCD Section 9.5.1.2.1.1 and Section 9A, Fire Hazard Analysis, for the Yard Area adequately addressed the required separation of the two fire pumps including cable separation. However, in reviewing the above referenced DCD sections, the staff cannot locate the discussion regarding cable separation for the fire pumps. In further review, the staff identified in DCD Table 9.5.1.1, Item #130, where the licensee indicated that the design is in compliance with BTP CMEB 9.5.1 guidelines for separation of the fire pumps and their associated drivers and controls but, again, there is no discussion on cable separation for these pumps.

The staff requests the licensee to provide additional description and/or cable routing details to demonstrate the power and control cables for the fire pumps are adequately separated and/or protected such that a postulated fire at any location in the plant area cannot render both redundant fire pumps inoperable in accordance with 10 CFR 50.48, Fire Protection, GDC 3 – Fire Protection of Appendix A to 10 CFR 50, and Regulatory Guide 1.189, Revision 2, Fire Protection for Nuclear Power Plants.

RAI 2, Question 3, subject area: Instrumentation & Control:

The NRC regulations in 10 CFR 50.90, “Application for amendment of license, construction permit, or early site permit.” state, in part, that when a holder of a combined license desires to amend the license, the application for an amendment must fully describe, “the changes desired, and following as far as applicable, the form prescribed for original applications.” 10 CFR 52.79, “Contents of applications; general information,” requires, in part, that applicants for a combined license (COL) provide a description and analysis of system, structures, and components of the facility sufficient to permit understanding of the system design and their relationship to safety

evaluations as well as the principle design criteria for the facility. 10 CFR 50.49, “Environmental qualification of electric equipment important to safety to nuclear power plants,” requires, in part, that the holder of a combined license (COL) shall establish a program for qualifying the electrical equipment defined as important to safety.

LAR-17-010 requested that, due to a revision of the Pipe Rupture and Hazard Analysis (PRHA) that resulted in higher water levels being postulated in areas of the auxiliary building, the licensee chose to add new safety-related level sensors, level transmitters and associated instrumentation and controls (I&C) equipment in the auxiliary building. Based upon the information provided in the LAR pertaining to the new safety-related level equipment (that interface with the protection and safety monitoring system (PMS)) and their new safety function(s), acceptance criteria in 10 CFR 50.55a(h), “Protection and safety systems” apply to the review of this amendment request. Regarding the principle design criteria for the facility, several criteria within 10 CFR Part 50 Appendix A, “General Design Criteria for Nuclear Power Plants” apply. Specifically, General Design Criteria (GDC) 4, “Environmental and Dynamic Effects Design Basis”; GDC 13, “Instrumentation and Control”; GDC 20, “Protection System Functions” and GDC 24, “Separation of Protection and Control Systems,” are also applicable.

In Enclosure 1 of the licensee’s application it states in the Summary Description, in part, “The proposed changes revise the COLs to modify the design of the power plant by adding two flood-up level sensors to the Auxiliary Building radiologically controlled area (RCA). These level sensors provide main control room (MCR) notification of a rise in water level that may indicate flooding in the Auxiliary Building.” Further, in the Detailed Description of Enclosure 1 it states, in part, “To alert the MCR of a potential flooding condition in the Auxiliary Building RCA, two safety-related, Class 1E, seismic Category I level sensors are proposed to be installed in the Auxiliary Building at Elevation 66'-6". A safety-related display in the MCR provides indication of the flooding situation. These sensors are safety-related and Class 1E because they are connected to the protection and safety monitoring system.”

1. The AP1000 PMS is composed of the following four subsystems: Reactor Trip functions, Engineered Safety Features Actuation System (ESFAS) functions, Qualified Data Processing System (QDPS) functions, and safety-related component control. Identify to which subsystem within the PMS the new level monitoring system will be connected as well as provide a description of how the new level sensors and new level transmitters will interface with that PMS subsystem.

2. Provide the location of the new level transmitters and the associated environmental qualification requirements for these transmitters.

<u>RAI 2, Question 4, subject area: Human Factors</u>:

The regulatory basis applies to both questions: Consideration of important human actions are part of the “state-of-the-art human factors principles” referenced in 10 CFR 50.34(f)(2)(iii). Chapter 18 of the Standard Review Plan (NUREG-0800) instructs NRC staff to

review changes to operator manual actions using NUREG-1764 which contains acceptance criteria related to credited operator actions.

a) Slides 42-43, that VEGP showed during an audit and has agreed to docket, provide information on how the manual action is being credited. However, the slides do not address environmental conditions that may interfere with actions credited to mitigate the cascading CVS high energy line break. Please include a brief description of any expected environmental conditions (e.g. flooding, steam, high radiation levels) that would interfere with, or prevent operators from accessing or performing the actions needed during a CVS high energy line break, and describe any actions taken to ensure operator success (such as prestaging equipment needed, or identifying alternate success paths).

b) The valves are in rooms 40340 and 4000 (according to slide 42). The location of Room 4000 does not appear to be shown in the UFSAR figures (for example, the Chapter 1 or Chapter 12 figures). As part of this response, please verify that Room 4000 is the correct room designation number and provide information describing the location of Room 4000 (i.e. building, elevation, and location in relationship to other rooms) and its use.

<end>