PMLevyCOLPEm Resource

From: Spicher, Terri
Sent: Tuesday, March 16, 2010 3:17 PM
To: Spicher, Terri; RidsNroDnrlNwe1 Resource; RidsNroLAKGoldstein Resource; RidsOgcMailCenter Resource; RidsAcrsAcnw_MailCTR Resource; RidsRgn2MailCenter Resource; Hughes, Brian; Simms, Tanya; Anderson, Brian; Comar, Manny; Joshi, Ravindra; Goetz, Sujata; Habib, Donald; Sebrosky, Joseph; Martin, Jody; Thomas, Brian; Galletta, Thomas; Thomas, Vaughn; Park, Sunwoo; Patel, Pravin; Ma, John; robert.kitchen@pgnmail.com; david.waters@pgnmail.com; tillie.wilkins@pgnmail.com
Cc: LevyCOL Resource
Subject: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 086 RELATED TO SRP SECTION 3.8.5 FOR THE LEVY COUNTY NUCLEAR PLANT, UNITS 1 and 2 COMBINED LICENSE APPLICATION
Attachments: Levy-RAI-LTR-86.pdf

Attached is RAI Letter No. 086 related to SRP Section 3.8.5, Foundations, for the Levy County Units 1 and 2 combined license application. The ADAMS Accession number is ML1007505452.

Terri Spicher
Project Manager
Office of New Reactors
U.S. Nuclear Regulatory Commission
301.415.1670

Hearing Identifier: Levy_County_COL_Public
Email Number: 617

Mail Envelope Properties (AF843158D8D87443918BD3AA953ABF780CD215DF31)

Subject: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 086 RELATED TO SRP SECTION 3.8.5 FOR THE LEVY COUNTY NUCLEAR PLANT, UNITS 1 and 2 COMBINED LICENSE APPLICATION
Sent Date: 3/16/2010 3:16:34 PM
Received Date: 3/16/2010 3:16:32 PM
From: Spicher, Terri

Created By: Terri.Spicher@nrc.gov

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Tracking Status: None

Post Office: HQCLSTR02.nrc.gov

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Levy-RAI-LTR-86.pdf	146390	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

LevyCountyRAIsPEm Resource

From: Spicher, Terri
Sent: Tuesday, March 16, 2010 2:46 PM
To: LevyCountyRAIsPEm Resource
Subject: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 086 RELATED TO SRP SECTION 3.8.5 FOR THE LEVY COUNTY NUCLEAR PLANT, UNITS 1 and 2 COMBINED LICENSE APPLICATION
Attachments: LC RAI SRP 3.8.5 on 3.16.10.doc

Hearing Identifier: Levy_County_COL_eRAIs
Email Number: 86

Mail Envelope Properties (AF843158D8D87443918BD3AA953ABF780CD215DEFA)

Subject: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 086 RELATED TO SRP SECTION 3.8.5 FOR THE LEVY COUNTY NUCLEAR PLANT, UNITS 1 and 2 COMBINED LICENSE APPLICATION
Sent Date: 3/16/2010 2:46:16 PM
Received Date: 3/16/2010 2:46:14 PM
From: Spicher, Terri

Created By: Terri.Spicher@nrc.gov

Recipients:
"LevyCountyRAIsPEm Resource" <LevyCountyRAIsPEm.Resource@nrc.gov>
Tracking Status: None

Post Office: HQCLSTR02.nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	8	3/16/2010 2:46:14 PM
LC RAI SRP 3.8.5 on 3.16.10.doc	67066	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

March 16, 2010

Mr. Garry Miller
General Manager, Nuclear Plant Development
Progress Energy Florida, Inc.
PO Box 1551
411 Fayetteville Street Mall
Raleigh, NC 27602

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 086 RELATED TO SRP SECTION 3.8.5 FOR THE LEVY COUNTY NUCLEAR PLANT, UNITS 1 and 2 COMBINED LICENSE APPLICATION

Dear Mr. Miller:

By letter dated July 28, 2008, as supplemented by a letter dated September 12, 2008, Progress Energy Florida, Inc. 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.

If you have any questions or comments concerning this matter, you may contact me at 301-415-1670 or you may contact Brian Anderson, the lead project manager for the Levy County Nuclear Plant Units 1 and 2 combined license application at 301-415-9967.

Sincerely,

/**RA**/

Terri Spicher, Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-029
52-030

eRAI Tracking No. 4363

Enclosure:
Request for Additional Information

If you have any questions or comments concerning this matter, you may contact me at 301-415-1670 or you may contact Brian Anderson, the lead project manager for the Levy County Nuclear Plant Units 1 and 2 combined license application at 301-415-9967.

Sincerely,

/**RA**/

Terri Spicher, Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-029
52-030

eRAI Tracking No. 4363

Enclosure:
Request for Additional Information

Distribution:

Public	TSimms	BThomas	
RidsNroDnrlNwe1	JSebrosky	SGoetz	PPatel
RidsNroLAKGoldstein	BHughes	DHabib	SPark
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RidsAcrsAcnw_MailCenter	DMcGovern	TSpicher	VThomas
RidsRgn2MailCenter	RJoshi	BAnderson	JMartin

NRO-002

OFFICE	SEB1/BC	NWE1/PM	NWE1/L-PM
NAME	BThomas *	*TSpicher	*BAnderson
DATE	02/18/10	02/18/10	03/09/10

*Approval captured electronically in the electronic RAI system.

OFFICIAL RECORD COPY

Request for Additional Information
Levy County, Units 1 and 2
Progress Energy Florida, Inc.
Docket No. 52-029 and 52-030
SRP Section: 03.08.05 - Foundations
Application Section: 3.8.5

QUESTIONS for Structural Engineering Branch 1 (AP1000/EPR Projects) (SEB1)

03.08.05-4

In the applicant response to Question 3.8.5-02, Part 2, of RAI 2925 (NRC Letter No. 055) the applicant provided a description of two testing programs associated with the RCC bridging mat. One program is associated with production testing and a second testing program associated with an RCC Test Program conducted prior to construction. The applicant provided a description of the tests that will be performed to assess shear strength both for the base material and for the lift joints including identification of the testing methods to be used. However, the response does not clearly address the number of tests to be performed and how the variability of RCC properties will be assessed. Thus, the staff is requesting that the applicant provide the following:

1. A detailed description as to how the proposed RCC construction for the Levy plant is similar to the construction for which the shear strength to compressive strength correlations provided by the USACE is appropriate.

2. Furthermore, direct shear tests are described which are to be used for the test program. It is not clear whether sampling of the production mat will be sampled to provide direct shear tests on "as-placed" material. Additionally, once the three direct shear tests are performed, how will the results of those tests be used to predict "design" strength?

3. If the mat is to be designed following typical concrete codes used for structures, then the concrete codes are targeting about a 1% probability of failure of the material, given the design load. It is not clear from the discussion how nominal capacities will be established from just three samples. Furthermore, it is not clear from the discussion provided whether factored loads, consistent with ACI structural codes are to be used for the design assessment.

4. The applicant has indicated in discussions with the NRC staff that an expanded test program is under development. A written description of this expanded program is required in order for the NRC staff to complete an evaluation of the acceptability of the final test program. This expanded program should include discussion that identifies the expected variability of material properties, methods used to quantify the variability, how this variability is incorporated into developing an appropriate factor of safety for design, as well as how the tests that will be performed during production will assure that the design strengths will be achieved.

03.08.05-5

In the applicant response to Question 3.8.5-02, Part 4, of RAI 2925 (NRC Letter No. 055) the applicant described the basis for the shear strength at lift joints, the expected seismic demand and the assumptions used in developing the design strength. However, the response indicates that the strength reduction factor from ACI is used to infer a factor of safety on allowable stress. Given that designs following the ACI concrete codes require load factors (e.g. increases in the dead, live, etc.

loads) to achieve the desired performance, the staff is requesting that that the applicant clarify how the use of just the strength reduction factor to estimate a target factor of safety is adequate to assure the desired level of performance for the RCC mat to support the nuclear island structures.

03.08.05-6

In the applicant response to Question 3.8.5-02, Part 5, of RAI 2925 (NRC Letter No. 055) the applicant described a number of quality control measures that will provide information needed to assure that the RCC material is of good quality and to determine the compressive strength and density of the as-placed material. However, none of the quality control measures appear to address the capability of the as-placed material to transfer shear or tension across the as constructed bedding joints. Thus, the staff is requesting that the applicant provide additional information which adequately addresses the transfer of shear or tension between the as-placed material and the bedding joints.

03.08.05-7

In the applicant response to Question 3.8.5-03, Part 1, of RAI 2925 (NRC Letter No. 055) the applicant described the approach used to compute seismic displacements at the foundation level for the Annex, Radwaste and the Turbine buildings. Evaluation of the response has lead to three additional questions.

1. It does not appear from the description provided in Part 1(d), that the effects of drilled shaft -to-drilled shaft interaction are considered. Interaction will reduce the stiffness of the foundation, thereby increasing the displacement to be expected. Discussions between the applicant and the NRC staff indicate that the design of these foundations are not complete, however, it has been assumed that the drilled shaft spacing will be sufficient to preclude interaction. Since the spacing and size of the deep foundations have not been developed, the potential effects of interaction cannot be dismissed out-of-hand. Please indicate the procedure(s) that will be used to assess the significance of the interaction effects between the drilled shafts in final design.

2. The description of application of loads to the pile group indicates that displacements were computed for the application of the inertial loading to the top of the piles. An additional source of relative displacement between the adjacent structures and the nuclear island, that appears to be neglected, is any additional displacement that may be developed from the soils along the sides of the RCC mat, including the engineered fill. This displacement will occur between the base of the RCC mat and the top of the soil corresponding to the elevation of the top of the pile foundation. See the attached sketch. Please provide the basis for neglecting this displacement including an estimate of its magnitude.

3. It appears that the ground motion used to assess liquefaction potential and global displacement of structures is the displacements associated with the GMRS and the related PBSRS. Since the performance goal is defined by the UHRS at the return period associated with the performance goal, please clarify why displacement and liquefaction are not evaluated to this higher desired performance level rather than the displacements associated with the GMRS.