

## LevyCountyRAIsPEm Resource

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**From:** Brian Anderson  
**Sent:** Tuesday, May 19, 2009 10:57 AM  
**To:** LevyCountyRAIsPEm Resource  
**Subject:** REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 040 RELATED TO SRP SECTION 2.4.5 FOR THE LEVY COUNTY UNITS 1 AND 2 COMBINED LICENSE APPLICATION  
**Attachments:** LNP-RAI-LTR-040.doc  
**Importance:** High

**Hearing Identifier:** Levy\_County\_COL\_eRAIs  
**Email Number:** 41

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**Subject:** REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 040 RELATED TO SRP SECTION 2.4.5 FOR THE LEVY COUNTY UNITS 1 AND 2 COMBINED LICENSE APPLICATION  
**Sent Date:** 5/19/2009 10:56:36 AM  
**Received Date:** 5/19/2009 10:56:38 AM  
**From:** Brian Anderson

**Created By:** Brian.Anderson@nrc.gov

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

**Post Office:** HQCLSTR01.nrc.gov

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MESSAGE	3	5/19/2009 10:56:38 AM
LNP-RAI-LTR-040.doc	68602	

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

May 19, 2009

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. 040 RELATED TO  
SRP SECTION 2.4.5 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 301-415-9967.

Sincerely,

**/RA/**

Brian C. Anderson, Lead Project Manager  
AP1000 Projects Branch 1  
Division of New Reactor Licensing  
Office of New Reactors

Docket Nos. 52-029  
52-030

eRAI Tracking No. 2161

Enclosure:  
Request for Additional Information

If you have any questions or comments concerning this matter, you may contact me at 301-415-9967.

Sincerely,

**/RA/**

Brian C. Anderson, Lead Project Manager  
AP1000 Projects Branch 1  
Division of New Reactor Licensing  
Office of New Reactors

Docket Nos. 52-029  
52-030

eRAI Tracking No. 2161

Enclosure:  
Request for Additional Information

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NRO-002

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NAME	RRaione *	BAnderson *	JMartin*	BAnderson*
DATE	02/12/09	02/13/09	04/23/09	05/19/09

\*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: 02.04.05 - Probable Maximum Surge and Seiche Flooding**  
**Application Section: FSAR Section 2.4**

**QUESTIONS for Hydrologic Engineering Branch (RHEB)**

02.04.05-1

To meet the requirements of GDC 2, 10 CFR 52.17, and 10 CFR Part 100, estimates of the probable maximum hurricane (PMH) and the probable maximum storm surge, are needed. The PMH, as defined by NOAA NWS Report 23, should be estimated for coastal locations that may be exposed to these events. In the FSAR text, it is stated that FSAR Table 2.4.5-201 contains a list of hurricanes that came within 50 mi of the LNP site during 1867-2004. The table contains a list of events that includes hurricanes, tropical storms, and tropical depressions. Please resolve this inconsistency.

02.04.05-2

To meet the requirements of GDC 2, 10 CFR 52.17, and 10 CFR Part 100, estimates of the probable maximum hurricane (PMH) and the probable maximum storm surge are needed. The storm surge induced by the PMH should be estimated as recommended by Regulatory Guide 1.59, supplemented by current best practices. Please clarify the use for Hsu's empirical equation for the estimation of PMH storm surge and justify why the estimated coastal storm surge elevations under PMH conditions would be conservative.

02.04.05-3

To meet the requirements of GDC 2, 10 CFR 52.17, and 10 CFR Part 100, estimates of the probable maximum hurricane (PMH) and the probable maximum storm surge are needed. The storm surge induced by the PMH should be estimated as recommended by Regulatory Guide 1.59, supplemented by current best practices. Please clarify the details of how the conversion from MSL to NGVD29 was made and provide details of how the Hsu method storm surge heights in FSAR Table 2.4.5-213 were obtained. Please clarify why the table is titled "PMH Analysis for the LNP Site," since it appears that the values reported in this table are for storm surges for hurricanes of categories 1 through 5 and not for the PMH.

02.04.05-4

To meet the requirements of GDC 2, 10 CFR 52.17, and 10 CFR Part 100, an estimate of wind-induced wave runup under PMH winds is needed. The controlling flood water surface elevations are estimated based on the combination of appropriate ambient water surface elevations, critical storm surge or seiche water surface elevations, and coincident wind-wave action as described in ANSI/ANS-2.8-1992.

- (1) The applicant stated in FSAR Revision 0, Section 2.4.5.2.3, page 2.4-37: "Since the datum used in the SLOSH model is NGVD, formerly known as the Sea Level Datum of 1929, an

astronomical tide level above NGVD29 would add additional height to the values computed by the SLOSH model. Thus, the SLOSH model accounts for astronomical tides.”

Jelesnianski et al. (1992) clearly state that astronomical tide is ignored by the SLOSH model except for its superposition onto the computed surge. The applicant’s statement conveys a broader interpretation of the capabilities of the SLOSH model in how it incorporates the effect of astronomical tide in surge computations.

- (2) The applicant stated in FSAR Revision 0, Section 2.4.5.2.3, page 2.4-37: “Generally, waves do not add significantly to the total area flooded by storm surge and can usually be ignored.” The applicant also stated in FSAR Revision 0, Section 2.4.5.3.1, page 2.4-41: “As mentioned in FSAR Subsection 2.4.5.2.3, the SLOSH model does not include the additional heights generated by wind-driven waves on top of the stillwater storm surge. Therefore, wind-driven wave height needs to be determined.” While the first statement may be true inasmuch as the area of inundation is concerned, it gives an impression that wind waves on top of storm surge stillwater elevation may be ignored, which is not the case, as stated by the second quote.

Please resolve these inconsistencies, or explain why your statements are sufficient.

#### 02.04.05-5

To meet the requirements of GDC 2, 10 CFR 52.17, and 10 CFR Part 100, estimates of the probable maximum hurricane (PMH) and the probable maximum storm surge are needed. The storm surge induced by the PMH should be estimated as recommended by Regulatory Guide 1.59, supplemented by current best practices. Please clarify and justify the hydrodynamic basis for the extrapolation equation, FSAR Revision 0 Equation 2.4.5-5, used for estimation of storm surge at the LNP site.

#### 02.04.05-6

To meet the requirements of GDC 2, 10 CFR 52.17, and 10 CFR Part 100, estimates of seiche and resonance in water bodies induced by meteorological causes, tsunamis, and seismic causes are needed. Please address the possibility of seiches of meteorological and seismic origin in Lake Rousseau; including, the possibility of resonance in Lake Rousseau that may amplify any potential seiche activity.

#### 02.04.05-7

To meet the requirements of GDC 2, 10 CFR 52.17, and 10 CFR Part 100, an estimate of wind-induced wave runup under PMH winds is needed. Criteria and methods of the USACE, as generally summarized in USACE Coastal Engineering Manual, are used as a standard to evaluate the PEF’s estimate of coincident wind-generated wave action and runup. These criteria are also used to evaluate flooding, including the static and dynamic effects of broken, breaking, and nonbreaking waves. Please add a reference in the FSAR for the methodology used to estimate wave action in Lake Rousseau, or explain why such a reference is not needed.

02.04.05-8

To meet the requirements of GDC 2, 10 CFR 52.17, and 10 CFR Part 100, an estimate of wind-induced wave runup under PMH winds is needed. The applicant added the estimated wave setup to the estimated stillwater PMH storm surge to obtain total water depth at the LNP site during the PMH conditions. Please provide an estimate of wave runup during the PMH storm surge at the LNP site.