



**FPL**

Florida Power & Light Company, 6501 S. Ocean Drive, Jensen Beach, FL 34957

This letter forwards proprietary information in accordance with 10 CFR 2.390. The balance of this letter may be considered non-proprietary upon removal of Attachment 2.

January 14, 2012

L-2011-565  
10 CFR 50.90  
10 CFR 2.390

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

Re: St. Lucie Plant Unit 1  
Docket No. 50-335  
Renewed Facility Operating License No. DPR-67

Response to NRC Instrumentation & Controls Branch Request for Additional Information Regarding Extended Power Uprate License Amendment Request

References:

- (1) R. L. Anderson (FPL) to U.S. Nuclear Regulatory Commission (L-2010-259), "License Amendment Request for Extended Power Uprate," November 22, 2010, Accession No. ML103560419.
- (2) Email from T. Orf (NRC) to C. Wasik (FPL), "St. Lucie 1 EPU question on setpoint related to seismic uncertainty," October 27, 2011.
- (3) Email from T. Orf (NRC) to C. Wasik (FPL), "St. Lucie 1 and 2 EPUs draft RAI - Instrumentation and Controls Branch (EICB)," November 23, 2011.
- (4) Email from C. Wasik (FPL) to T. Orf (NRC), "Numbering for EICB RAIs (Setpoint Uncertainties); St. Lucie Units 1 & 2," December 5, 2011.
- (5) Email from T. Orf (NRC) to C. Wasik (FPL), "St. Lucie 1 and 2 EPUs draft RAI - Instrumentation and Controls Branch (EICB)," December 6, 2011.

By letter L-2010-259 dated November 22, 2010 [Reference 1], Florida Power & Light Company (FPL) requested to amend Renewed Facility Operating License No. DPR-67 and revise the St. Lucie Unit 1 Technical Specifications (TS). The proposed amendment will increase the unit's licensed core thermal power level from 2700 megawatts thermal (MWt) to 3020 MWt and revise the Renewed Facility Operating License and TS to support operation at this increased core thermal power level. This represents an

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approximate increase of 11.85% and is therefore considered an extended power uprate (EPU).

By email from the NRC Project Manager dated October 27, 2011 [Reference 2], additional information related to the proposed instrumentation & controls setpoint methodology was requested by the NRC staff in the Instrumentation & Controls Branch (EICB) to support their review of the EPU License Amendment Request (LAR). The request for additional information (RAI) involved the treatment of seismic uncertainty in the EPU steam generator (SG) level setpoint calculation. Subsequent discussion with the NRC staff indicated the RAI would be applicable to both St. Lucie Units 1 and 2. By email from the NRC Project Manager dated November 23, 2011 [Reference 3], additional information was requested by EICB regarding the treatment of radiation effects in the subject EPU setpoint calculation. By email from FPL to the NRC Project Manager dated December 5, 2011 [Reference 4], these two questions were identified as RAIs EICB-9 (seismic uncertainty) and EICB-10 (radiation effects). Clarification of RAI EICB-9 was also provided in Reference 4. By email from the NRC Project Manager dated December 6, 2011 [Reference 5], additional information was requested by EICB regarding the treatment of insulation resistance in the subject EPU setpoint calculation. This question was identified as RAI EICB-11.

Attachment 1 to this letter provides the FPL response to RAIs EICB-9, EICB-10, and EICB-11. Attachment 2 provides Westinghouse calculation CN-TAS-08-36, Revision 3, "Setpoint Uncertainties and Operability Limits for the Steam Generator Level RPS and AFAS Functions for St. Lucie Unit 1." This calculation was revised to include consideration of a seismic uncertainty term (RAI EICB-9). Westinghouse calculation CN-TAS-08-36 contains information proprietary to Westinghouse.

Attachment 3 provides the Westinghouse affidavit which requests withholding of the Attachment 2 calculation from public disclosure. The Affidavit, signed by Westinghouse as the owner of the information, sets forth the basis for which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of § 2.390 of the Commission's regulations. Accordingly, it is respectfully requested that the information which is proprietary to Westinghouse be withheld from public disclosure in accordance with 10 CFR 2.390.

In accordance with 10 CFR 50.91(b)(1), a copy of this letter is being forwarded to the designated State of Florida official.

This submittal does not alter the significant hazards consideration or environmental assessment previously submitted by FPL letter L-2010-259 [Reference 1].

This submittal contains no new commitments and no revisions to existing commitments.

Should you have any questions regarding this submittal, please contact Mr. Christopher Wasik, St. Lucie Extended Power Uprate LAR Project Manager, at 772-467-7138.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Executed on *14-January-2012*

Very truly yours,



Richard L. Anderson  
Site Vice President  
St. Lucie Plant

Attachments (3)

cc: Mr. William Passetti, Florida Department of Health

### Response to Request for Additional Information

The following information is provided by Florida Power & Light in response to the U.S. Nuclear Regulatory Commission's (NRC) Request for Additional Information (RAI). This information was requested to support the Extended Power Uprate (EPU) License Amendment Request (LAR) for St. Lucie Unit 1 that was submitted to the NRC by FPL via letter (L-2010-259) dated November 22, 2010 (Accession Number ML103560419).

By email from the NRC Project Manager dated October 27, 2011, Subject: "St. Lucie 1 EPU question on setpoint related to seismic uncertainty," additional information related to the proposed instrumentation & controls setpoint methodology was requested by the NRC staff in the Instrumentation & Controls Branch (EICB) to support their review of the EPU LAR. The request for additional information (RAI) involved the treatment of seismic uncertainty in the EPU steam generator (SG) level setpoint calculation. Subsequent discussion with the NRC staff indicated the RAI would be applicable to both St. Lucie Units 1 and 2. By email from the NRC Project Manager dated November 23, 2011, Subject: "St. Lucie 1 and 2 EPUs draft RAI - Instrumentation and Controls Branch (EICB)," additional information was requested by EICB regarding the treatment of radiation effects in the subject EPU setpoint calculation. By email from FPL to the NRC Project Manager dated December 5, 2011, Subject: "Numbering for EICB RAIs (Setpoint Uncertainties); St. Lucie Units 1 & 2," these two questions were identified as RAIs EICB-9 (seismic uncertainty) and EICB-10 (radiation effects). Clarification of RAI EICB-9 was also provided in the email. By email from the NRC Project Manager dated December 6, 2011, Subject: "St. Lucie 1 and 2 EPUs draft RAI - Instrumentation and Controls Branch (EICB)," additional information was requested by EICB regarding the treatment of insulation resistance in the subject EPU setpoint calculation. This question was identified as RAI EICB-11.

These three RAI questions (designated as EICB-9, EICB-10, and EICB-11) and the FPL responses are documented below.

#### EICB-9

**Setpoint calculations CN-TAS-08-36, Rev. 2 and CN-TAS-09-5, Rev. 2 include justification for excluding a seismic uncertainty term in the total loop uncertainty calculation. The justification provided in these setpoint calculations is based on procedurally driven actions to either shutdown or confirm channel operability via performance of applicable surveillance procedures. Since the identified procedural actions will require some period of time to implement, provide additional justification to demonstrate protection system operability for the interim period of time immediately following an earthquake. Alternatively, the setpoint calculations may be revised to include seismic uncertainty terms where applicable.**

### Response

St. Lucie Unit 1 setpoint calculation CN-TAS-08-36 was revised to incorporate seismic uncertainty terms where applicable based on published manufacturers specifications. In accordance with FPL setpoint methodology, these seismic effects were treated as random, independent uncertainties combined with the square root sum of squares technique consistent with ISA 67.04 unless otherwise indicated by the manufacturer. Revision 3 of setpoint calculation CN-TAS-08-36 is included as Attachment 2 to this letter.

Note that a similar revision has been made to the St. Lucie Unit 2 setpoint calculation CN-TAS-09-5. Revision 3 to CN-TAS-09-5 will be provided in a separate transmittal for St. Lucie Unit 2.

### EICB-10

**FPL letters L-2011-464, dated November 1, 2011 for St. Lucie Unit 1 and L-2011-465, dated November 2, 2011 for St. Lucie Unit 2 EPU provide the revised calculations for the Steam Generator Low Level Trip for reactor protection system. These calculations do not include or address the rationale for not including the normal radiation errors pertaining to the level transmitters. The normal radiation effect (Rn) and the accident radiation effect (Ra) are listed under Elements of Uncertainty in Table 4-1 of the calculations. However, the calculations do not specifically address Rn terms. The calculations should clearly explain the basis for not including any error due to normal radiation. Without an explicit rationale, the staff considers these as unstated and unverified assumptions. Provide the justification for not including normal radiation in the calculations for normal (non-accident) case calculations.**

### Response

Based on review of the St. Lucie Unit 1 and 2 dose levels provided in the update to the Environmental Qualification (EQ) Documentation Package drawings, the projected 60 year maximum integrated dose to the Unit 2 steam generator water level transmitters ( $4.5E4$  Rad/60 year) is larger than the 60 year maximum integrated dose to the Unit 1 steam generator water level transmitters ( $3.8E4$  Rad/60 year). As a result, only Unit 2 will be discussed in this response.

The steam generator (SG) level transmitters for both St. Lucie Units 1 and 2 are located outside the bioshield wall and the bounding Unit 2 radiation dose for normal conditions is calculated based on  $4.5E4$  Rad/60year, or  $< 1410$  Rad/22.5 months. These dose estimates are conservative, since they are based on 1% failed fuel, and not representative of normal/current operation. Based on St. Lucie Unit 2 UFSAR Figure 12.3-6, radiation doses in the bioshield region are  $< 15\text{mR/hr} = < 250$  Rad/22.5 months for normal operation. This value was unchanged due to EPU. Based on industry standards, doses less than  $1E3$  Rads and  $1E5$  Rads are considered mild for solid state electronics and electrical equipment, respectively. As a result, for a 22.5 month period, the dose should

not have any significant effect on the calibration of the Rosemount model 1154 transmitters used in this application. Since the instrument loops and transmitters are required by Technical Specifications to be calibrated on a refueling cycle frequency, any small shift in the nominal calibration (due to radiation or any other causal factor) will be calibrated out.

Rosemount pressure transmitters are tested with radiation levels much greater than  $10E6$  Rads total ionizing dose. Since these high radiation tests do not cause the electronics to fail and since the normal 22.5 month exposure to the equipment is more than 10,000 times smaller, calibration of the instrumentation each reload should remove any and all systematic radiation errors.

Additionally, based on Figure 4.6-1 in St. Lucie Unit 1 calculation CN-TAS-08-36 (Attachment 2 to this letter), only the transmitter is located in the reactor containment building. All the other equipment is located in the control room. For the control room, the Unit 1 UFSAR Section 12.1.1 identifies a dose rate of 0.5 mRem/hr and the Unit 2 UFSAR Table 12.3-1 identifies a dose rate of 0.25 mRem/hr for normal operation. These values were unchanged due to EPU. As a result, only the bounding case for Unit 1 will be considered in the paragraph below.

A 0.5 mRem/hr dose rate is approximately equal to 0.5 mRad/hr to equipment. Converting this value gives an expected 60 year dose of <300 Rad. Based on industry standards, doses less than  $1E3$  Rads and  $1E5$  Rads are considered mild for solid state electronics and equipment, respectively. As a result, for a 60 year period within the control room, the dose should not have any significant effect on the calibration of the instrument channel.

### EICB-11

**Section 4.6.5 of the Westinghouse calculations (CN-TAS-08-36, Rev. 2 for Unit 1 and CN-TAS-09-5, rev. 2 for Unit 2) lists the steam generator level instrument channel uncertainties. Both units list an Insulation Resistance accident accuracy of +0.25%. Note 1 just below the table for both calculations states that the "IR effects need to be considered". However, neither of the equations for calculations for the low steam generator level RPS trip uncertainty in Section 5.1.2 (accident case) includes the IR accuracy term. It is also not included as a bias term. Clarify why the IR term is not included anywhere in the accident case calculation.**

### Response

The insulation resistance (IR) effects are included in the calculation of the low steam generator level auxiliary feedwater (AFW) actuation accident uncertainty in Section 5.1.4 of CN-TAS-08-36 (Attachment 2 to this letter) but are not included in the calculation of the low steam generator water level reactor trip uncertainty in Section 5.1.2. The IR effects are included in the low steam generator level AFW actuation accident uncertainty

as this setpoint is relied upon long-term during accident conditions to control AFW flow to the steam generators.

The IR effects are not included in the calculation of the low steam generator water level reactor trip uncertainty in Section 5.1.2 for the following reasons. A summary of the reactor protection system (RPS) trips credited in the safety analyses described in EPU LAR Attachment 5, Section 2.8.5, is summarized in EPU LAR Attachment 5, Table 2.8.5.0-9. A review of the table indicates that the event which credits the low steam generator level reactor trip is:

- Loss of Normal Feedwater Flow (EPU LAR Attachment 5, Section 2.8.5.2.3).

The loss of normal feedwater flow event does not result in harsh conditions inside containment where the steam generator level transmitters are located. Accordingly, the IR accident uncertainty does not have to be considered in the low steam generator level reactor trip setpoint calculation for this event.

An additional event that credits the low steam generator level reactor trip is the loss of feedwater event with a concurrent high energy line break in the AFW system. The details of this analysis are described in the FPL response to RAI SRXB-29 (submitted by FPL letter L-2011-448, dated October 31, 2011, Accession No. ML11307A338). Similar to the discussion above for the loss of normal feedwater flow event, this particular event does not result in harsh conditions inside containment where the steam generator level transmitters are located. The high energy line break in the AFW system occurs outside containment where the AFW system is located. Accordingly, the IR accident uncertainty does not have to be considered in the low steam generator level reactor trip setpoint calculation for this event.

A low steam generator water level reactor trip signal could result from a main steam line break (MSLB) accident. This accident creates a harsh environment inside containment where the steam generator level transmitters are located. As presented in St. Lucie Unit 1 EPU LAR Attachment 5, Section 2.8.5.1.2, the MSLB accident credits a reactor trip due to high indicated power, asymmetric steam generator pressure, or high containment pressure. The limiting time to trip is about 23 seconds for the pre-scrum MSLB accident (EPU LAR Attachment 5, Table 2.8.5.1.2-1). This is not a significant amount of time for degradation of the cable jacket and conductor insulation which causes the IR to decrease.

**ATTACHMENT 3**

**Response to NRC Instrumentation & Controls Branch  
Request for Additional Information Regarding  
Extended Power Uprate License Amendment Request**

**Westinghouse Electric Company, LLC  
Application for Withholding Proprietary Information  
From Public Disclosure**

This coversheet plus 7 pages



Westinghouse Electric Company  
Nuclear Services  
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Cranberry Township, Pennsylvania 16066  
USA

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11555 Rockville Pike  
Rockville, MD 20852

Direct tel: (412) 374-4643  
Direct fax: (724) 720-0754  
e-mail: greshaja@westinghouse.com  
Proj letter: FPL-11-298

CAW-11-3313

November 22, 2011

APPLICATION FOR WITHHOLDING PROPRIETARY  
INFORMATION FROM PUBLIC DISCLOSURE

Subject: Calculation Note CN-TAS-08-36, Rev. 3, "Setpoint Uncertainties and Operability Limits for the Steam Generator Level RPS and AFAS Functions for St. Lucie Unit 1" (Proprietary)

The proprietary information for which withholding is being requested in the above-referenced calculation note is further identified in Affidavit CAW-11-3313 signed by the owner of the proprietary information, Westinghouse Electric Company LLC. The affidavit, which accompanies this letter, sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of 10 CFR Section 2.390 of the Commission's regulations.

The subject document was prepared and classified as Westinghouse Proprietary Class 2. Westinghouse requests that the document be considered proprietary in its entirety. As such, a non-proprietary version will not be issued.

Accordingly, this letter authorizes the utilization of the accompanying affidavit by Florida Power and Light.

Correspondence with respect to the proprietary aspects of the application for withholding or the Westinghouse affidavit should reference this letter, CAW-11-3313, and should be addressed to J. A. Gresham, Manager, Regulatory Compliance, Westinghouse Electric Company LLC, Suite 428, 1000 Westinghouse Drive, Cranberry Township, Pennsylvania 16066.

Very truly yours,

A handwritten signature in black ink, appearing to read 'J. A. Gresham'.

*JAG*  
J. A. Gresham, Manager  
Regulatory Compliance

Enclosures

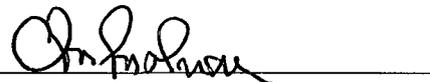
AFFIDAVIT

STATE OF CONNECTICUT:

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COUNTY OF HARTFORD:

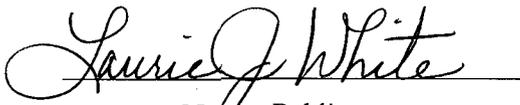
Before me, the undersigned authority, personally appeared C. M. Molnar, who, being by me duly sworn according to law, deposes and says that he is authorized to execute this Affidavit on behalf of Westinghouse Electric Company LLC (Westinghouse), and that the averments of fact set forth in this Affidavit are true and correct to the best of his knowledge, information, and belief:



C. M. Molnar, Senior Engineer

Regulatory Compliance

Sworn to and subscribed before me  
this 22<sup>nd</sup> day of November 2011



Notary Public

My commission expires: 8/31/2014

- (1) I am Senior Engineer, Regulatory Compliance, in Nuclear Services, Westinghouse Electric Company LLC (Westinghouse), and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing and rule making proceedings, and am authorized to apply for its withholding on behalf of Westinghouse.
- (2) I am making this Affidavit in conformance with the provisions of 10 CFR Section 2.390 of the Commission's regulations and in conjunction with the Westinghouse Application for Withholding Proprietary Information from Public Disclosure accompanying this Affidavit.
- (3) I have personal knowledge of the criteria and procedures utilized by Westinghouse in designating information as a trade secret, privileged or as confidential commercial or financial information.
- (4) Pursuant to the provisions of paragraph (b)(4) of Section 2.390 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.
  - (i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse.
  - (ii) The information is of a type customarily held in confidence by Westinghouse and not customarily disclosed to the public. Westinghouse has a rational basis for determining the types of information customarily held in confidence by it and, in that connection, utilizes a system to determine when and whether to hold certain types of information in confidence. The application of that system and the substance of that system constitutes Westinghouse policy and provides the rational basis required.

Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential competitive advantage, as follows:

    - (a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of

Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

- (b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage, e.g., by optimization or improved marketability.
- (c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.
- (d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.
- (e) It reveals aspects of past, present, or future Westinghouse or customer funded development plans and programs of potential commercial value to Westinghouse.
- (f) It contains patentable ideas, for which patent protection may be desirable.

There are sound policy reasons behind the Westinghouse system which include the following:

- (a) The use of such information by Westinghouse gives Westinghouse a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Westinghouse competitive position.
- (b) It is information that is marketable in many ways. The extent to which such information is available to competitors diminishes the Westinghouse ability to sell products and services involving the use of the information.
- (c) Use by our competitor would put Westinghouse at a competitive disadvantage by reducing his expenditure of resources at our expense.

- (d) Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving Westinghouse of a competitive advantage.
  - (e) Unrestricted disclosure would jeopardize the position of prominence of Westinghouse in the world market, and thereby give a market advantage to the competition of those countries.
  - (f) The Westinghouse capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.
- (iii) The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR Section 2.390; it is to be received in confidence by the Commission.
- (iv) The information sought to be protected is not available in public sources or available information has not been previously employed in the same original manner or method to the best of our knowledge and belief.
- (v) The proprietary information sought to be withheld in this submittal is that which is contained in Calculation Note CN-TAS-08-36, Rev. 3, "Setpoint Uncertainties and Operability Limits for the Steam Generator Level RPS and AFAS Functions for St. Lucie Unit 1" (Proprietary), for submittal to the Commission, being transmitted by Florida Power and Light letter and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk. The proprietary information as submitted by Westinghouse is that associated with justifying setpoint uncertainties and operability limits for St. Lucie Unit 1 under extended power uprate (EPU) conditions and may be used only for that purpose

This information is part of that which will enable Westinghouse to:

- (a) Support the St. Lucie Unit 1 EPU License Amendment Request.

Further this information has substantial commercial value as follows:

- (a) Westinghouse plans to sell the use of similar information to its customers for the purpose of defending setpoint uncertainties and operability limits in licensing submittals.
- (b) Westinghouse can sell support and defense of analyses involving setpoint uncertainties and operability limits.
- (c) The information requested to be withheld reveals the distinguishing aspects of a methodology which was developed by Westinghouse.

Public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Westinghouse because it would enhance the ability of competitors to provide similar calculations and licensing defense services for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others to use the information to meet NRC requirements for licensing documentation without purchasing the right to use the information.

The development of the technology described in part by the information is the result of applying the results of many years of experience in an intensive Westinghouse effort and the expenditure of a considerable sum of money.

In order for competitors of Westinghouse to duplicate this information, similar technical programs would have to be performed and a significant manpower effort, having the requisite talent and experience, would have to be expended.

Further the deponent sayeth not.

## **PROPRIETARY INFORMATION NOTICE**

Transmitted herewith is the proprietary version of a document furnished to the NRC in connection with requests for generic and/or plant-specific review and approval. The document is to be considered proprietary in its entirety.

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The report transmitted herewith bears a Westinghouse copyright notice. The NRC is permitted to make the number of copies of the information contained in this report which is necessary for its internal use in connection with generic and plant-specific reviews and approvals as well as the issuance, denial, amendment, transfer, renewal, modification, suspension, revocation, or violation of a license, permit, order, or regulation subject to the requirements of 10 CFR 2.390 regarding restrictions on public disclosure to the extent such information has been identified as proprietary by Westinghouse, copyright protection notwithstanding. Copies made by the NRC must include the copyright notice in all instances and the proprietary notice if the original was identified as proprietary.