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

FPL

October 31, 2011

L-2011-453
10 CFR 50.90

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

Re: St. Lucie Plant Unit 2
Docket No. 50-389
Renewed Facility Operating License No. NPF-16

Response to NRC Request for Additional Information (RAI)
Regarding Extended Power Uprate License Amendment Request

References:

(1) R. L. Anderson (FPL) to U.S. Nuclear Regulatory Commission (L-2011-021), "License Amendment Request for Extended Power Uprate," February 25, 2011, Accession No. ML110730116.
(2) Email from NRC (T. Orf) to FPL (C. Wasik), "St. Lucie 2 EPU draft RAIs -- Electrical Engineering (EEEB)," September 15, 2011.

By letter L-2011-021 dated February 25, 2011 [Reference 1], Florida Power & Light Company (FPL) requested to amend Renewed Facility Operating License No. NPF-16 and revise the St. Lucie Unit 2 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 approximate increase of 11.85% and is therefore considered an Extended Power Uprate (EPU).

By email from the NRC Project Manager dated September 15, 2011 [Reference 2], additional information was requested by the NRC staff in the Electrical Engineering Branch (EEEB) to support their review of the EPU License Amendment Request (LAR). The draft request for additional information (RAI) identified nine questions. The responses to these RAIs are provided in the attachment to this letter.

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

A001
NRR

This submittal does not alter the significant hazards consideration or environmental assessment previously submitted by FPL letter L-2011-021 [Reference 1].

This submittal contains no revisions to existing commitments.

A new commitment is made pursuant to the FPL response to RAI EEEB-9. Accordingly, the following commitment is made:

FPL commits to completing the modifications to remove the wave traps in the St. Lucie plant switchyard and the FPL Midway substation prior to operating St. Lucie Unit 2 at EPU ratings.

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 31-October-2011

Very truly yours,

Richard L. Anderson
Site Vice President
St. Lucie Plant

Attachment

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 2 that was submitted to the NRC by FPL via letter (L-2011-021), February 25, 2011, Accession Number ML110730116.

In an email from the NRC Project Manager dated September 15, 2011, additional information was requested by the NRC staff in the Electrical Engineering Branch (EEEB) to support their review of the EPU LAR. The draft request for additional information (RAI) identified nine questions. These nine RAI questions and the FPL responses are documented below.

EEEB-1

Explain how you have addressed environmental qualification (EQ) margins for the electrical equipment in accordance with the following regulations and regulatory guidance documents:

(a) 10 CFR 50.49e (8),
(b) Regulatory Guide (RG) 1.89, Revision 1, "Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants, Section C.4, and
(c) The Institute of Electrical and Electronics Engineers (IEEE) Standard 323-1974, "IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations," Section 6.3.1.5 Margin.

Response

The guidance provided in Regulatory Guide 1.89, Rev. 1, Section C.4 is similar to the criteria and recommendations provided in the 10 CFR 50.49(e)(8) and the IEEE 323-1974 Standard, Section 6.3.1.5 in that all these documents recommend the same actions to ensure the un-quantified uncertainty, such as the effects of production variations and inaccuracies in test instruments as well as to ensure that the postulated accident conditions have been enveloped and adequately account for commercial production variations.

The EPU Environmental Qualification (EQ) evaluation is based on a comparison of the current environmental conditions for safety-related Class 1E electrical equipment and equipment important to safety against the resulting EPU environmental parameters. Utilizing the criteria delineated in 10 CFR 50.49(e) (8), the margin available between the required value and the actual qualification value is assessed. If the margin recommendation of the criteria documents is not met the equipment is listed as an outlier. The outliers are further evaluated to determine the best action to maintain or restore qualification.

As part of the EPU EQ evaluation, each environmental value with the potential of being impacted by the EPU, specifically, temperature, pressure, and radiation, has been reviewed to ensure that the recommended margin requirements of IEEE 323 have been met. Whenever the margin recommendations were not met under the initial EPU EQ screen for a specific piece of equipment, that piece of equipment was considered an outlier. If the IEEE 323 margin recommendations could not be met, then alternative solutions, e.g. operating time duration, relocation, replacement or modification were recommended. At St. Lucie, the above alternative

solutions were required to meet IEEE 323 margins at EPU conditions and all equipment remained qualified to current as well as EPU conditions.

EEEB-2

Page 2.3.1-4 of Attachment 5 of the license amendment request (LAR) states, in part: "Peak EPU LOCA and MSLB temperatures are bounded by the current peak.....with the exception of a small portion of the curve which from time 1E3 to 1E4 seconds is approximately 20 degrees above the EQ profile. This small departure is not detrimental to the EQ of the equipment....." Please explain how this condition maintains adequate EQ margin as specified in Regulatory Guide (RG) 1.89, Revision 1, Section C.4, and IEEE 323-1974, Section 6.3.1.5.

Response

The Regulatory Guide 1.89, Revision 1, Section C.4, and IEEE 323-1974, Section 6.3.1.5 margin is typically demonstrated at the peak of the curve and not on a point by point basis.

Only the peak accident temperature and pressure are compared against the EQ qualification temperature to demonstrate qualification per IEEE 323-1974 as can be seen in example Figure 1 on page 16 of IEEE 323. IEEE 323 requires evaluation at the peak temperature and pressure which present the most demanding environment and cause the greatest challenge to equipment.

St Lucie EQ profiles were developed to show the limiting profile that would support equipment qualification for all EQ equipment.

The comparison between the pre-EPU and the EPU accident temperature curves shows that the EQ temperature curve does not drop below the recommended margin until the accident temperature is declining. Any potential detriment to affected equipment would have already occurred at the peak conditions.

In addition, the EQ profile temperature steps show a higher temperature is maintained for significantly longer than the accident profile periods. This adds margin, since electrical equipment aging is a function of temperature and duration. Therefore, the margin added due to maintaining a longer duration at higher temperatures is considered more than adequate for qualification.

Additionally, the EQ Profile used to qualify the Class IE Electrical equipment causes more thermal degradation than the new EPU Profile.

EEEB-3

Page 2.3.3-5 of Attachment 5 of the LAR states: "However, isolated phase bus (IPB) main transformer (MT), unit auxiliary transformer (UAT) and potential transformer (PT) tap buses short circuit design ratings are less than the anticipated worst-case fault current levels for both pre-EPU and EPU conditions. This is a current plant design issue. Further analysis has shown that only the UAT taps require modification. The modifications to resolve over duty condition on IPB UAT tap buses will be implemented prior to EPU." Explain the following:

a. How this over duty condition on IPB MT and PT tap buses were justified for pre-EPU conditions.

b. Explain how the final modifications will resolve the above issue for EPU conditions.

Response

a. An independent consultant was engaged to analyze the isolated phase bus (IPB) for EPU conditions. The results of this analysis indicated that no modifications are required for the Main Transformer (MT) and Potential Transformer (PT) IPB taps following the extended power uprate (EPU). Worst-case fault current conditions for the MT and PT IPB taps are more severe following EPU modifications than for the existing IPB configuration. The existing (pre-EPU) MT and PT IPB tap configurations are thus bounded by the analysis performed for EPU conditions. Therefore, these sections of the IPB system have been adequately designed to withstand the anticipated worst-case fault currents for pre-EPU conditions.

b. The recommendations provided by the independent consultant are summarized below.

1. Conductor in UAT bus
   Replace existing channel conductor with tube conductor with minimum of 5 square inch cross sectional area. An alternative method to correct the UAT conductor is to weld a stiffener plate to the existing conductor. This will limit the conductor movement and reduce the 60 HZ force on the insulator.

2. Insulator/ Insulator mounting in UAT bus
   The existing insulator has 3100 lbs cantilever strength. Replace it with higher strength insulator, OR

   Add another insulator next to the existing insulator to increase the strength.

The method selected to address the noted condition is to weld a stiffener plate to the existing U-shaped channel. This will create a conductor with a rectangular cross section. The plate is to be 5" wide X 0.5" thick and approximately 42" long. The additional area added to the conductor will be 2.5 square inches. When added to the existing 2.9 square inches, there will be a cross sectional area of 5.4 square inches. This will be greater than the area of 5 square inches as recommended. Additionally, a second insulator will be added to increase the resistance to cantilever forces.

These modifications will ensure that the IPB UAT taps have adequate capacity to withstand an asymmetrical short circuit event.

EEEB-4

Section 2.3.3 of Attachment 5 of the LAR concludes that the Unit 2 emergency diesel generator (EDG) loading has increased due to EPU but maximum loading is within the rating of the EDGs. Provide the following:

a. A summary of calculation(s) detailing EDG loading with EPU changes and the EDG operating at the worst case allowable voltage and frequency.

b. Technical Specifications (TS) marked-up pages 3/4 8-6 Surveillance Requirement (SR) 3.8.1.1.2.e.5.a and 3/4 8-7 SR 3.8.1.1.2.e.7.a state, "Within 10 seconds, generator voltage and frequency shall be 4160±420 volts and 60±1.2 Hertz." Provide a detailed discussion to demonstrate that all safety-related loads powered by the EDG with the above proposed voltage and frequency limits would be able to start and run until the EDG attains steady state voltage and frequency without any damage. Also confirm that the accident analysis assumptions, such as valve stroke times or pump flows etc., remain valid under EPU conditions.

Response

a. The St. Lucie Unit 2 Emergency Diesel Generator (EDG) 2A, which is associated with the most heavily loaded Engineered Safety Features (ESF) buses among the Unit 2 EDGs, is used as a bounding case for Unit 2 EDG loading. EDGs 2A and 2B have the following ratings:

Base Continuous Rating	3669.4 kW
2000 Hour Rating	3934.3 kW
30 Minute Short Term Rating	4108.6 kW

Steady State Loading

The St. Lucie Unit 2 Technical Specifications require that auto-connected loads to EDG set do not exceed the 2000 hour rating of 3935 kW. Also, Regulatory Guide (R.G.) 1.9, Rev. 0, March 1971 "Application and Testing of Safety-Related Diesel Generators in Nuclear Power Plants" requires that the predicted continuous loading of the EDG set should not exceed the smaller of the 2000 hour rating or 90% of the 30 minute rating (0.90 x 4108.6), a value of 3697.7 kW. The smaller number is 3697.7 kW.

Unit 2 EDG loading has been evaluated for EPU changes under LOOP and LOOP/LOCA, and EPU conditions at frequencies of 60 Hz and 60.6 Hz (EPU Technical Specifications overfrequency requirement). The maximum steady-state EDG loading has been analyzed as follows for the LOOP/LOCA conditions (more severe profile):

TABLE EEEB 4a-1 UNIT 2 MAXIMUM EDG LOAD AT EPU		
Description	**Load at 60 Hz** **LOOP + LOCA**	**Load at 60.6 Hz** **LOOP + LOCA**
Maximum Steady-State Load	3349.4 kW (Load Block 12)	3435.9 kW (Load Block 12)
Maximum Continuous Rating	Maximum Continuous Rating 3697.7 kW	Maximum Continuous Rating 3697.7 kW
Margin	9.42%	7.08%

The table above indicates that the maximum Unit 2 steady-state EDG load of 3435.9 kW at 60.6 Hz under LOOP/LOCA conditions (Load Block 12 Subtotal) is less than the maximum continuous rating of 3697.7 kW. Subsequent Load Blocks added to the EDG loading profile result in a decreased load, and do not exceed the generator transient capability.

Therefore, the Unit 2 EDG loading meets the requirements of Unit 2 Technical Specifications and R.G. 1.9.

Transient Loading

The vendor's Generator Transient Capability curves for the engine and generator set are used to determine the capability to start a particular load or group of loads on the EDG with existing load already running on the EDG. Where the starting load(s) remain below (within) the vendor's transient capability of the engine, then it can be assumed that the EDG frequency (engine speed) remains within the specified limits. Similarly, where the starting load(s) remain within the transient capability of the generator, then it can be assumed that the EDG voltage remains within the specified limits.

The following table provides a summary of the Unit 2 EDG load blocks (LBs) up to the largest load block (LB 12 - @ 38 seconds; the EDG loading decreases after LB 12). The initial (steady-state) loads and starting (transient) loads were evaluated at 60.6 Hz under LOOP/LOCA and EPU conditions, and the corresponding generator transient capability was derived from the Generator Transient Capability curve:

TABLE EEEB 4a-2 UNIT 2 LOOP/LOCA EDG LOADING AT EPU (60.6 HZ)			
Description	**Initial (Steady-State) Load, kilowatts (kW)**	**Starting (Transient) Load, Horsepower (Hp)**	**Generator Transient Capability (Hp)**
LB 1 Subtotal	0	875.2	1620 (1)
LB 2 Subtotal	906.7	569.0	1500 (1)
LB 3 Subtotal	1471.40	464.8	1430 (1)
LB 4 Subtotal	1878.2	600.0	1400 (1)
LB 5 Subtotal	2230.5	503.0	1260 (1)
LB 6 Subtotal	2644.4	100.0	1140 (1)
LB 7 Subtotal	2716.2	13.3	1080 (2)
LB 8 Subtotal	2728.3	185.0	1070 (2)
LB 9 Subtotal	2913.3	20.9	910 (2)
LB 10 Subtotal	3013.3	350.0	830 (2)
LB 11 Subtotal	3282.8	150.0	630 (2)
LB 12 Subtotal	3392.9	50.0	560 (2)
		(1) Hp Generator Limited (2) Hp Hot Engine Limited	

The table above indicates that in all affected load blocks, the generator transient capability exceeds the load block starting load, and the plotted points fall beneath both the Generator and Engine Capability curves.

Therefore at EPU conditions, the EDG will meet the response requirements specified in St. Lucie Unit 2 UFSAR and Technical Specifications, R.G. 1.9 and original vendor performance parameters. The specified limits to meet the Technical Specifications and R.G. 1.9 requirements are as follows: during transient loading the voltage will remain ≥ 75% of nominal and frequency ≥ 95% of nominal, with recovery to 4160 ± 420 V and 60 ± 0.6 Hz.

In conclusion, the St. Lucie Unit 2 EDG sets will continue to operate under EPU conditions within their design ratings, and maintain their transient capability within the allowable voltage and frequency.

b. On receipt of a safety injection actuation signal (SIAS) without a loss of offsite power (LOOP), the emergency diesel generators (EDGs) start sequence is initiated. The EDGs are brought up to operating speed and the field is flashed. However, the EDG output breakers do not close. There are EDG frequency and voltage sensing relays that have their contacts wired in series that serve as permissives to the EDG output breaker automatic close circuit. These permissives operate in conjunction with engineered safeguards features (ESF) bus voltage relaying permissives. Once these permissive relays are actuated, the EDG output breaker is automatically closed. The Technical Specifications (TS) allowable time duration from the initiation of the EDG start sequence to the EDG output breaker closure cannot exceed 10 seconds. This means that the EDG's voltage and frequency must be in an acceptable range within 10 seconds for its associated output breaker to close in order to satisfy Technical Specification requirements. Therefore for the event described, the EDG would be expected to achieve acceptable voltage and frequency values within 10 seconds, but the output breaker would not automatically close. The EDG supplied motor loads are not subjected to EDG induced voltage and frequency deviations that would inhibit their ability to perform their designed safety function for a SIAS without LOOP event.

The EPU LAR proposed a change to Technical Specification Surveillance Requirements 4.8.1.1.2.e.5.a, and 4.8.1.1.2.e.7.a to change the steady state EDG voltage from 4160±420 volts to 4160±210 volts and the EDG frequency range from 60±1.2 Hertz to 60±0.6 Hertz. EPU LAR Attachment 1, Section 3.1, "Renewed Facility Operating License and Technical Specification Changes," item 21 identifies the basis for the changes and provides the requested detailed discussion to demonstrate that all safety-related loads powered by the EDG with the above proposed voltage and frequency limits would be able to start and run until the EDG attains steady state voltage and frequency without any damage. This item 21 also confirms that the accident analysis assumptions, such as valve stroke times or pump flows, etc., remain valid under EPU conditions.

EEEB-5

Page 2.3.5-1 of Attachment 5 of the LAR states, "The SBO analysis credits the availability of an EDG from St. Lucie 1 as an Alternate Alternating Current (AAC) source." Based on our review of the proposed EPU for St. Lucie Unit 2, the staff noticed that EDG loading for St. Lucie Unit 2 will increase as a result of the proposed EPU. Provide a summary of the calculation detailing the margin available for the St. Lucie Unit 1 EDGs under EPU conditions when used as an AAC source for St. Lucie Unit 2 SBO under EPU conditions.

Response

FPL cannot find the referenced statement in the LAR. As noted on pages 2.3.5-1 and 2.3.5-2, a plant-specific analysis (UFSAR Section 15.10) was performed by FPL which demonstrated the plant could successfully withstand a complete loss of ac power for at least 4 hours. In the context of the Station Blackout (SBO) rule this constitutes a coping analysis independent of ac power. St. Lucie Unit 2 is a dc coping plant, which means it does not require an AAC source. As noted on page 2.3.5-2, a Unit 1 EDG may be available to support Unit 2 during an SBO event; however, it is not credited in the Unit 2 SBO analysis.

EEEB-6

Page 2.5.7.1-6 of Attachment 5 of the LAR states, "A proposed change to TS 3.8.1.1 and TS 3.8.1.2 is provided as part of the license amendment request to capture the additional volume of ultra low sulfur fuel oil. The proposed change increases the minimum fuel storage system requirement for each EDG from 40,000 gallons to 42,500 gallons." Provide a summary of the calculation for the EDG fuel oil storage volume validating the proposed 42,500 gallon requirement for each EDG (as shown on marked-up pages on Technical Specification (TS) LCOs 3.8.1.1.b.2 and 3.8.1.2.b.2 in Attachment 3 of the LAR). Provide a discussion which demonstrates that an explicit allowance for EDG fuel oil consumption required for periodic testing was included in the calculation as recommended in Section 5.4 of American Nuclear Society (ANS)-59.51-1976 / American National Standards Institute (ANSI) N195-1976 which is endorsed by Regulatory Guidance 1.137.

Response

Table EEEB 6-1 below summarizes the calculation that supports the proposed new TS values of 42,500 gallons of fuel oil for each EDG set post EPU.

The fuel oil volumes listed below are based on using ultra low sulfur (ULSD, S15, <15 ppm sulfur) fuel oil as required by the Clean Air Act. The consumption and storage values provided below have been adjusted primarily to compensate for the lower high heating value (HHV) of ULSD when compared to low sulfur fuel (LSD), which is the basis for the current TS values. A lower HHV results in an increase in the fuel consumption rate by the EDG for a given load.

The calculation determines the required ULSD fuel necessary to support operation of a single EDG set for 7 days considering the most limiting design basis accident. This calculation also includes an allowance for periodic testing and a 10% margin as required by ANSI N195-1976. The load profile used in the fuel oil consumption calculation is based on loads that have been adjusted to account for 1% EDG over-frequency operation.

Table EEEB 6-1

Item Description	Volume, gallons	Comments/Basis
Total Gallons Consumed by One EDG in 7 Days Post LOCA/LOOP = Total Required Usable Volume	36954	Consumption is based on EPU EDG loading profile over the 7 day time period. Consumption developed using test data to determine a consumption rate that is then adjusted for consumption of ultra low sulfur (ULSD) fuel oil.
Total Gallons Consumed During Periodic Test	300	Periodic Test
Total Required (Usable) to Meet 7 Days Post LOCA/LOOP, Periodic Test	37254	Sum of required volumes

Table EEEB 6-1		
Item Description	**Volume, gallons**	**Comments/Basis**
Margin Required by ANSI N195	3725	10% margin.
Total Required (Usable) to Meet 7 Days Post LOCA/LOOP, Periodic Test Plus 10% Margin	40979	Total required (useable) to meet 7 days Post LOCA/LOOP, Periodic Test plus 10% margin required by ANSI N195.
Assumed Margin for Future EDG Loading Revisions	984	Assumption to make total volume a round number.
Total Required Volume for System with Future Margin	41963	Total consumed volume plus assumed margin.
Two Day Tanks, Usable Volume Credited Towards System Requirement	378	Each EDG has two engines (one has 12 cylinders and the other has 16 cylinders). Each engine has its own day tank. The two day tanks are hydraulically linked so that the two tanks can be considered as one consolidated tank for the purpose of fuel oil consumption. TS value per day tank = 238 gal which includes 24.4 gallons unusable volume* and 24.4 gallons instrument measurement tolerance (2 inch variation in level); 238 – (24.4 + 24.4) = 189.2 gallons, rounded down to 189 gallons per day tank. Total usable volume of 2 tanks is 189x 2 = 378 gallons.
		* Includes volume below day tank outlet nozzle plus additional volume to prevent vortex formation.
One DOST Required Usable Volume	41585	Total required volume.
DOST Unusable Volume	628	Includes volume below DOST outlet nozzle plus additional volume to prevent vortex formation.
DOST Instrument Measurement Tolerance	252	2 inch variation in level.
DOST TS Total Volume Post EPU	42465	Sum of required usable volume plus unusable volume plus instrument measurement uncertainty.

EEEB-7

Page 2.3.4-4 of Attachment 5 of the LAR states that the EPU direct current (DC) load increases on the 2A and 2B batteries affect only for Safety Injection Actuation System (SIAS) scenarios. Discuss any changes in the 2A and 2B battery load profiles of the full accident (SIAS) loading scenarios due to DC load increase under EPU conditions. Provide the battery load profile used for the battery service test prescribed by Technical Specifications Surveillance Requirement 4.8.2.1.d to demonstrate that the load profiles for the worst case accident scenarios, including SBO, remain bounded under EPU conditions.

Response

The table below describes the loading changes in amperes that will affect the 2A and 2B batteries. These changes are applicable to both SIAS and SBO conditions.

Change	2A	2B	2AB*
Relay Replacement	+0.044	+0.088	+0.024
Main Transformer Replacement (DC Load Difference)	+0.18	+0.18	
Digital Fault Recorder Assessment		-4.28	
Relay Replacement	+0.34		
Total Change	+0.564	-4.012	

*2AB Loads are fed from either the 2A or 2B Batteries. The 2A and 2B Battery total shown includes the 2AB load.

The battery load profile used for the service test prescribed by Technical Specification Surveillance Requirement 4.8.2.1.d is provided in the Unit 2 UFSAR as Figure 15.10-13. This is the profile for station blackout (SBO) conditions, and envelopes the worst case accident scenarios.

EEEB-8

Page 2.3.4-2 of Attachment 5 of the LAR states, in part, "Each battery's capacity permits 4 hours of emergency operation without assistance from a battery charger. Each station battery supplies power for 125 Volt direct current (VDC) safety loads that include....instrument power along with some non-Class loads..." Describe how the failure of these non-safety loads under postulated environmental conditions will not prevent satisfactory accomplishment of safety functions of the safety-related batteries.

Response

The safety related station batteries 2A and 2B, through the 125 VDC Class 1E buses 2A, 2AA, 2B and 2BB along with a swing bus 2AB, supply power to Class 1E loads and some non-Class 1E loads. The 125 VDC safety related buses supply control voltage for both non-safety related trains of the 6.9kV, 4.16kV, and 480V switchgears. There are also ties that allow these safety related buses (via swing bus 2AB) to connect to the non-safety related 125 VDC buses 2C and 2D; the ties consist of circuit breakers, normally open except for testing. The electrical separation criteria between the 125 VDC Class 1E buses and non-Class 1E loads was designed in accordance with the requirements of IEEE 384-1974 which implemented the separation requirements of IEEE- 279-1971 "Criteria for Protection Systems for Nuclear Power Generating Stations" and IEEE-308- 1971 "Criteria for Class 1E Power Systems for Nuclear Power Generating Stations", and meets the guidance of Regulatory Guide (R.G.) 1.75, Rev. 1 "Physical Independence of Electric Systems". Compliance to R.G. 1.75 R1, regulatory position C1, as discussed in St. Lucie Unit 2 UFSAR Section 8.3.1.2.2, is as follows. The design of the Class 1E portions of the Onsite Power System includes non-safety related loads which are isolated by means of fault current interrupting devices (i.e., circuit breakers, fuses). These loads are required to be automatically disconnected upon detection of an emergency condition, to be consistent with the guidance of R.G. 1.75 R1. The design, as approved by the NRC in the Operating License Safety Evaluation Report Section 8.4.2, is such that those non-critical non-safety related loads (not considered important for operation and plant investment) are shed from the Class 1E buses (alternating current power systems only) by a Safety Injection Actuation Signal (SIAS) or are locked out of service during plant operation in accordance with the Technical Specifications. However, those essential non-safety related loads (considered important for operation and plant investment) will remain connected to the Class 1E buses, but they will be provided with two Class 1E isolation devices in series.

The design of the onsite Class 1E DC system buses 2A and 2B is to provide, for those non-safety related loads that are not disconnected by a SIAS, two isolation devices (a circuit breaker and a fuse) in series, in conformance with R.G. 1.75 R1. Selectivity/coordination for the main bus branch circuits is typically not a concern since the battery output circuit breakers are non-automatic and the battery charger output breakers are sized larger than their current limit setpoints. Failures and operation of protection devices are required to be detectable either directly by alarms or indirectly by load equipment status. Therefore, the circuit breaker and fuse in series provide qualified electrical isolation to remove faulted non-safety related loads from the 125 VDC Class 1E buses and protect the buses, during normal operation and operational occurrences at EPU conditions.

A modification is planned that will affect the safety-related portions of the Class 1E 125 VDC System at EPU conditions. The modification changes the power sources for Isolated Phase Bus Duct (IPBD) cooling fans from 480 VAC MCCs (non-Class 1E) to 480 VAC load centers (non-

Class 1E). Another modification that will affect the 125 VDC battery loading is the Bus Margin Improvement Modification that will trip on a SIAS the control circuits for these IPBD cooling fan breakers as well as other breakers for the main feedwater and heater drain pump motors, and main transformer cooling equipment. The new load center circuit breakers will add minor load to existing load center DC control power circuits. Hence, there are no changes to the configuration of Class 1E 125 VDC buses 2A and 2B at EPU conditions by addition or removal of bus circuit breakers.

The EPU Project does not change or modify the design philosophy of how non-Class 1E loads are isolated and separated from the Class 1E loads for the 125VDC system. For non-critical loads, breakers are locked open. For essential loads, the proper loading effect, isolation and separation remain the same.

Therefore, the EPU changes will not impact the current design basis criteria of the 125 VDC system, and any failure of the associated non-safety related loads under postulated environmental conditions will not prevent satisfactory accomplishment of safety functions of the safety related station batteries at EPU conditions.

EEEB-9

The licensee proposed following changes in Section 2.3.2 of Attachment 5 of LAR:

1. **The three St. Lucie Midway line ratings will be increased from 2380 Ampere (A) to 2790 A.**
2. **Modifications to install spacers between existing bundled phase conductors, fiber optic overhead ground wire on all three lines, replacement of associated disconnect switches and a power system stabilizer.**
3. **Modifications to replace wavetraps with overhead fiber optic protection schemes, replacement of disconnect switches, and upgrade or replacement of associated jumpers, buses and equipment connections.**

Provide a discussion providing the reasoning for not including these modifications as Regulatory Commitments in Attachment 7 of LAR.

Response

The work described above was expected to be completed during the previous Unit 1 refueling outage. Because of the timing, it was not considered necessary to include these items in Attachment 7 of the LAR. The noted modifications been completed with the exception of the wave trap removals (in the St. Lucie plant switchyard and the FPL Midway substation), which are scheduled for completion during the 2011 Unit 1 refueling outage.

FPL commits to completing the modifications to remove the wave traps prior to operating St. Lucie Unit 2 at its EPU ratings.