Progress Energy

Crystal River Nuclear Plant
Docket No. 50-302
Operating License No. DPR-72

Ref: 10CFR50.90

July 31, 2007
3F0707-08

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Subject: Crystal River Unit 3 – License Amendment Request #297, Revision 0
Emergency Diesel Generator Voltage and Frequency Limits Revision

Dear Sir:

Florida Power Corporation (FPC), doing business as Progress Energy Florida, Inc, hereby submits License Amendment Request (LAR) #297, Revision 0. The proposed LAR will revise the Crystal River Unit 3 (CR-3) Improved Technical Specifications (ITS) Surveillance Requirements (SR) 3.8.1.2, SR 3.8.1.6, and SR 3.8.1.10 to restrict the voltage and frequency limits for both slow and fast Emergency Diesel Generator starts. The steady state voltage limits will be revised to plus or minus 2 percent of nominal voltage to accurately reflect the appropriate calculation and the way the plant is operated and tested. The steady state frequency limits are also becoming more restrictive (plus or minus 1 percent for fast and emergency diesel starts) to assure compliance with plant design bases and the way the plant is operated, thus assuring the Diesel Generators are capable of supplying power with the correct voltage and frequency to the required electrical loads.

Currently, the voltage and frequency limits are being administratively controlled under the provisions of NRC Administrative Letter 98-10, as the current ITS voltage limits were determined to be non-conservative.

The frequency limit change is the result of an industry issue where the limits established in Regulatory Guide (RG) 1.9, Revision 2, "Selection, Design, and Qualification of Diesel-Generator Units Used as Standby (Onsite) Electric Power Systems at Nuclear Power Plants," were determined to not have any plant specific calculational basis for all conditions and events. The RG guidance was the basis for the limits in the CR-3 ITS.

FPC requests approval of this request by July 31, 2008, with a 60 day implementation period, to permit completion of required procedure changes and training.

Regulatory commitments identified in this LAR are captured in Attachment D.

Progress Energy Florida, Inc.
Crystal River Nuclear Plant
15760 W. Powerline Street
Crystal River, FL 34428

4001

HRR

The proposed amendment has been reviewed and recommended for approval by the Plant Nuclear Safety Committee.

If you have any questions regarding this submittal, please contact Mr. Paul Infanger, Supervisor, Licensing and Regulatory Programs at (352) 563-4796.

Sincerely,

Dale E. Young
Vice President
Crystal River Nuclear Plant

DEY/par

Attachments:
A. Description of the Proposed Change, Background, Justification for the Request, Determination of No Significant Hazards Consideration, and the Environmental Assessment
B. Proposed Technical Specification Page Changes Strikeout and Shadowed Text Format
C. Proposed Technical Specification Page Changes Revision Bar Format
D. List of Regulatory Commitments
E. Proposed Revised Bases Pages (For Information Only)

xc: NRR Project Manager
Regional Administrator, Region II
Senior Resident Inspector
State Contact

STATE OF FLORIDA

COUNTY OF CITRUS

Dale E. Young states that he is the Vice President, Crystal River Nuclear Plant for Florida Power Corporation, doing business as Progress Energy Florida, Inc.; that he is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission the information attached hereto; and that all such statements made and matters set forth therein are true and correct to the best of his knowledge, information, and belief.

Dale E. Young
Vice President
Crystal River Nuclear Plant

The foregoing document was acknowledged before me this 31st day of July, 2007, by Dale E. Young.

Signature of Notary Public
State of Florida

ELLEN DEPPOLDER
MY COMMISSION # DD 408539
EXPIRES: July 8, 2009
Bonded Thru Notary Public Underwriters

(Print, type, or stamp Commissioned
Name of Notary Public)

Personally Known ✓ -OR- Produced Identification _____

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50-302/LICENSE NUMBER DPR-72

LICENSE AMENDMENT REQUEST #297, REVISION 0

ATTACHMENT A

DESCRIPTION OF THE PROPOSED CHANGE, BACKGROUND, JUSTIFICATION FOR THE REQUEST, DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS, AND THE ENVIRONMENTAL ASSESSMENT

DESCRIPTION OF THE PROPOSED CHANGE BACKGROUND, JUSTIFICATION FOR THE REQUEST, DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION, AND THE ENVIRONMENTAL ASSESSMENT

1.0 DESCRIPTION OF PROPOSED CHANGE

The proposed change would revise the Crystal River Unit 3 (CR-3) Improved Technical Specifications (ITS) to read as follows:

Surveillance Requirement (SR) 3.8.1.2 to verify each EDG starts from standby conditions and achieves steady state voltage $\geq$ 4077 and $\leq$ 4243 V, and frequency $\geq$ 59.1 and $\leq$ 60.9 Hz.

SR 3.8.1.6 to verify each EDG starts from standby condition and achieves, in $\leq$ 10 seconds, voltage $\geq$ 4077 and $\leq$ 4243 V, and frequency $\geq$ 59.4 and $\leq$ 60.6 Hz.

SR 3.8.1.10.c.3 to verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ES actuation signal: the EDG auto-starts from standby condition and achieves steady-state voltage $\geq$ 4077 and $\leq$ 4243 V.

SR 3.8.1.10.c.4 to verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ES actuation signal: the EDG auto-starts from standby condition and achieves steady-state frequency $\geq$ 59.4 and $\leq$ 60.6 Hz.

2.0 BACKGROUND

Most plants undergoing a conversion to ITS incorporated the RG 1.9 values of voltage and frequency limits since these limits were incorporated into the Standard Technical Specifications (STS) (NUREG-1430 for B&W reactors). The CR-3 ITS values for EDG steady state voltage (minimum and maximum) are not based on the voltages used in the CR-3 specific calculations and therefore, do not, in all cases, support the Final Safety Analysis Report (FSAR) and Enhanced Design Basis Document (EDBD) requirements for transient voltages and frequencies and maximum kW loading for the EDGs.

During the Component Design Basis Inspection at several plants, the NRC raised a concern about frequency limits as specified in some plants' Technical Specifications (TS). The concern was that a pump may operate at the lower frequency limit when required for emergency service, which is acceptable per TS acceptance criteria, but it is not demonstrated by calculation or testing at the lower frequency limits. Testing is normally performed at the nominal voltage and frequency of 4160 VAC and 60 Hz, and analysis had not been performed to demonstrate the capability at the frequency high and low limits.

The impacts of voltages or frequencies that are too high or too low include the following:

- Voltage too low would cause the EDG to not perform adequately. The major concern is having loads not operate correctly at low voltages. Additionally, this could cause increased current which may cause some components to trip on overcurrent.

- Voltages too high would be an impact on available KiloWatts (kW) and reduce available EDG margin.

- Frequency too high would affect available kW and the motor loads as it would impact the service factor of the motors.

- Frequency too low would negatively impact pump and motor speed, affecting pump flow and motor operated valve stroke times.

CR-3 has determined that the values in the CR-3 ITS are non-conservative. The existing CR-3 ITS voltage limits are based on 4160 VAC Class-1E bus limits. The maximum limit of 4400 V is based on 110% of the Class-1E motor voltage rating of 4000 VAC. The minimum voltage limit of 3933 V is the second level under voltage relay degraded voltage setpoint. This limit was established for when the grid supplies the Engineered Safeguards (ES) busses.

New frequency limits based on EDG capability were evaluated after industry operating experience indicated that the existing steady state frequency limits may not be adequate for all conditions and events as the EDG may not be able to support the electrical loads or parameters (flow rates and valve stroke times may not meet requirements) if the EDG is allowed to operate at the extremes of the allowed frequency range. The current CR-3 ITS frequency range is plus or minus 2% (58.8 to 61.2 Hz).

An engineering evaluation was performed that indicates the new CR-3 ITS limits will be acceptable with respect to load performance. The engineering evaluation demonstrated that a decrease in EDG frequency of 1% would not prevent the safety-related pumps from performing their design functions. Sufficient differential pressure and flow would be developed to assure the accident analyses minimums would be provided. Additionally, no safety-related motor operated valves would exceed their maximum allowed stroke time if the EDG frequency was reduced by 1%, which would cause the valve to open slower. The evaluation also demonstrated that an increase in frequency, as an impact on available kW, would not prevent the required ES components from performing their design function. Administrative limits have been established for the minimum and maximum frequencies (plus or minus 1%) on fast EDG start testing to ensure operability of the supported equipment.

Similarly, plant specific calculations have been performed that demonstrate EDG operability based on administrative voltage limits in current plant surveillance procedures. Calculations use a minimum voltage of 98% and a maximum voltage of 102% of nominal voltage (4160 Volts). Voltage limits of 98% and 102% support the EDBD and updated FSAR statements concerning EDG transient voltage and frequency limits during block loading and EDG kW loading limits. The EDBD and FSAR transient voltage and frequency limits are based on

Regulatory Guide (RG) 1.9, "Selection, Design, and Qualification of Diesel-Generator Units Used as Standby Onsite Electric Power Systems at Nuclear Power Plants."

3.0 JUSTIFICATION FOR THE REQUEST

The EDGs at CR-3 are designed to supply emergency power to specific safety related electrical loads on a loss of offsite power (LOOP) condition. Some loads have to be stripped from the electrical bus prior to the EDG output breaker closing to protect the EDG from an overload condition. Due to the manner in which the loads are sequenced onto the bus, specific EDG voltage and frequency limits have been established, for transient and steady state operation, to assure the EDG will be able to perform its function and the loads will be able to perform their functions. Limits have been incorporated into the CR-3 ITS and are used to verify operability of the EDGs.

NRC Administrative Letter 98-10, "Dispositioning of Technical Specifications That Are Insufficient to Assure Plant Safety," states that the discovery of an inadequate TS value is considered a degraded condition under Generic Letter 91-18. Administrative controls are an acceptable short term corrective action, along with a license amendment request submittal, to resolve the condition in a timely manner. Administrative controls have been established at CR-3 for both the voltage limits and frequency limits. This LAR requests that these more restrictive values be incorporated into the CR-3 ITS.

CR-3 plant specific calculations E91-0026, Revision 3, and E91-0027, Revision 3, were issued in 1997 to regain / demonstrate design margins in the electrical distribution systems. Part of the effort was to address minimum / maximum EDG voltages and the impact to EDG loading and performance. The calculations used 4160 VAC plus or minus 2% for the evaluations. At that time, the surveillance test procedures were revised with administrative limits conservatively more restrictive than the ITS limits for EDG voltage during steady state operation. However, at that time it was not identified that an ITS revision was required.

The voltage and frequency dips resulting from a motor starting during initial block loading and manual loading events are less than 25% and 5%, respectively. Voltage and frequency recover, within 3 seconds of all motor starting events, to within 10% and 2% respectively, even when starting at a voltage 2% below 4160 volts.

The initial dip limits of 25% for voltage and 5% for frequency during the start of each load block were taken from RG 1.9, Revision 3, July 1993. The recovery limits of 10% for voltage and 2% for frequency, within 60% of the time between each load block start (3 seconds), were also taken from RG 1.9, Revision 3.

The loads to the EDG are added in six load blocks (load steps) that are separated from each other by 5 seconds. Ten (10) seconds are allowed for the EDG to start, come up to speed and provide adequate voltage and frequency and thereby provide a permissive to close the EDG output breaker to its respective ES bus.

The EDG surveillance for voltage has been satisfied since 2002 except for several instances where a hardware problem existed in 2006. Maintaining the voltage limits within plus or minus 2% of 4160 Volts has not been a significant challenge.

An evaluation was performed to determine that the frequency of the EDG can be restricted to a tighter band (1% versus the current 2% tolerance). The tolerance that was provided in RG 1.9 as an acceptable recovery frequency range around the nominal 60 Hz was used and no plant specific calculation was performed. The concerns were primarily if margin could be gained for EDG loading between 60.6 and 61.2 Hz and for Emergency Core Cooling System (ECCS) pump flow margin for frequencies between 58.8 and 59.4 Hz. Pump flow margins are being evaluated separately. A review of Surveillance test results for the last 3 years demonstrated that the Surveillance Requirement for steady-state frequency has been satisfied within a 1% range around the nominal frequency without any significant challenges. Current plant procedures have administrative limits of 59.4 and 60.6 Hz (plus or minus 1% of 60 Hz) to account for previously undefined meter uncertainty.

The speed (and therefore, the frequency) of the EDG is a function of the governor accuracy. For a fast start, the EDG speed is partially dependent on the as left speed setting. This also holds true for an ES actuated (emergency) fast start. The fast start is representative of the conditions and start signals that would occur in an emergency, either loss of power on the associated ES bus or an ES actuation. Therefore, when the as left setting is restored to the nominal frequency, the next start will be acceptable with regards to EDG frequency. A review of the last three years of surveillance testing verifies this capability. The EDG will be left at the nominal 60 Hz at the completion of the required EDG testing. These values are within the readability of the EDG frequency meter on the main control board of 0.1 Hz, which is half of a minor division on the meter.

Slow speed starts are not representative of any design basis accident, but are used to verify the continued operability of the EDGs. However, the slow speed start is used in 10 CFR 50, Appendix R scenarios. A control room fire is postulated to affect the EDG speed setting circuit allowing the governor speed control to be driven to the low speed setting. This situation is a worst case analyses where a fire could disable an EDG by making it unable to supply the required equipment loads. If the EDG does not reach its high speed setting, the permissive to close the output breaker will not occur. When the remote shutdown switch is re-positioned to remote shutdown, the circuitry is aligned to run the governor motor back to the high speed setting. The reason the larger frequency tolerance is acceptable for slow starts is primarily due to the reduced EDG loading during an Appendix R scenario.

The slow start is performed monthly in order to minimize wear and tear on the diesel engine during testing. During a slow start, the diesel generator is started in manual and will quickly reach 500 rpm (low speed limit setpoint) prior to the speed gradually increasing (when placed in Automatic Mode) to 900 rpm (high speed limit setpoint). The final speed is a function of the governor accuracy and the high speed limit cam setting. The high speed cam is an electro-mechanical device that is in the slow speed start circuitry only. From past history, the high speed cam setting is difficult to set with great precision. Once set, the repeatability is very good. As such, the frequency developed by the EDG is being allowed to be within 1.5% of 60 Hz (59.1 to 60.9 Hz) due to the difficulty with the precise adjustment of this device.

Surveillance records demonstrate that this is an acceptable steady state frequency tolerance for slow starts of the EDG.

Slow EDG starts are performed to assure continued operability of the EDG, but do not create the same amount of wear as an emergency start. They verify that the EDG has all necessary support systems available, and is capable of providing power to the required safety-related motors and pumps and, once up to rated voltage and frequency, can supply power to all required loads. The final speed is dependant on the governor as well as the high speed cam setting. The fast EDG starts verify the EDG is capable of performing its design function in the time frame assumed in the accident analyses. The fast start final speed is only dependant on the governor setting and accuracy. This allows the fast start steady state frequency to have a more restrictive acceptance band than the slow start testing.

The voltage limits for both the fast and slow start testing are controlled by the EDG voltage regulator, which is highly accurate. The voltage limits of plus or minus 2% (4077 to 4243 V) have been consistently met since the administrative controls were established. The only exceptions were several instances of hardware failure (local voltage control rheostat) in 2006. The rheostat would allow successful voltage adjustment, but would drift outside its allowable band by the next surveillance. The rheostat was replaced once the condition was identified.

The closer the voltage is to the nominal voltage, the tighter the voltage band will be at the end device, either pump motor or valve. These pieces of equipment have minimum and maximum operating voltages and, in order to assure reliable operation the voltage at the motor leads has to be above the minimum. The same holds true for maximum allowable voltage, too high of a voltage impacts loading capability on the EDG. The tighter the allowable voltage band, the further away from the extremes of operating voltage the equipment will experience and the larger the margin.

The same logic applies to the EDG frequency range. Since the frequency of the EDG is directly dependent to the speed of the EDG, the speed of the end device is directly dependent on the frequency of the EDG. If the frequency is too low, the device may not operate in the time frame assumed in the accident analysis. If the frequency is too high, the frequency may affect the motor service factor and available kW. Outside the allowed frequency range, damage to the equipment may occur. Therefore, restricting the EDG frequency band will provide additional assurance that the loads supplied by the DG will perform their functions as designed and as assumed in the accident analyses.

SR 3.8.1.8 is not being revised as this SR verifies the capability of the EDG to recover from a load rejection. The EDG is already running at rated speed with acceptable voltage and frequency on the ES bus. This condition is discussed in RG 1.9, Regulatory Position C.1.4, and a distinction is made in the allowed EDG response between accepting a large load and a load rejection. The intent of SR 3.8.1.8 is to verify that the EDG does not trip on large load loss and is sufficiently recovered to continue to accept the remaining load blocks within the required timeframe, and is not a verification of the steady state voltage and / or frequency.

Conclusion

The EDG provides emergency power to specific safety related equipment in a specific range of voltage and frequency to assure the equipment will function as designed, providing the required flows and time responses. The present voltage limits were developed based on early limits established for offsite voltages and incorporated in the CR-3 ITS. Calculations, to regain/demonstrate design margin, were later performed that utilized a plus or minus 2% tolerance for EDG voltages, and administrative limits were incorporated into the Surveillance procedures for the EDGs. This condition allows the EDGs to be outside the voltage design limits but still within CR-3 ITS limits, which is non-conservative. Administrative controls are in place to assure the design basis of the plant is maintained.

The current frequency limits were directly taken from RG 1.9 and incorporated into the CR-3 ITS. No site specific calculations were performed to verify the required loads would function during worst case electrical conditions during a design or licensing basis event. Administrative limits were incorporated into surveillance procedures to account for and envelop meter uncertainties. Evaluations are being performed that are expected to demonstrate load equipment functionality with the more restrictive steady state frequency limits, and will be issued by August 31, 2007. Surveillance test results also demonstrate that the EDGs were capable of operating in a more restrictive frequency tolerance band. Administrative controls are in place to assure the EDG testing procedures use the more restrictive frequency acceptance limits.

The administrative controls will assure that the EDG remains within the more restrictive limits and maintain the initial conditions for the accident analyses assumptions until this LAR is implemented.

4.0 NO SIGNIFICANT HAZARDS CONSIDERATION

Florida Power Corporation (FPC) has evaluated the proposed License Amendment Request (LAR) against the criteria of 10 CFR 50.92(c) to determine if any significant hazards consideration is involved. FPC has concluded that this proposed LAR does not involve a significant hazards consideration. The following is a discussion of how each of the 10 CFR 50.92(c) criteria is satisfied.

(1) Does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The LAR proposes to provide more restrictive steady state voltage and frequency limits for the Emergency Diesel Generators (EDGs). The voltage band is going from a range of greater than or equal to 3933 VAC but less than or equal to 4400 VAC to greater than or equal to 4077 VAC but less than or equal to 4243 VAC. The proposed limits are plus or minus 2% around the nominal safety-related bus voltage of 4160 VAC. The Frequency Limits are going from a 2% tolerance band to a 1 % tolerance band around the nominal frequency of 60 Hz (59.4 to 60.6 Hz), for fast starts and emergency starts of the EDGs. These acceptance limits are specifically for steady state conditions following a fast start of the EDGs.

Slow starts will also have a more restrictive frequency band, but it will be slightly larger

than for fast starts. The reason for this difference is based on the speed control circuitry for the EDG. The EDG has an electro-mechanical component in the slow start circuitry that is not present in the fast start circuitry. The proposed slow start limits are plus or minus 1.5% (59.1 Hz to 60.9 Hz). The voltage limits for a slow start will be the same as for a fast start.

The EDGs are a safety related system that functions to mitigate the impact of an accident with a concurrent loss of offsite power. A loss of offsite power is typically a significant contributor to postulated plant risk and, as such, onsite AC generators have to be maintained available and reliable in the event of a loss of offsite power event. The EDGs are not initiators for any analyzed accident, therefore; the probability for an accident that was previously evaluated is not increased by this change. The revised, voltage and frequency limits will ensure the EDGs will remain capable of performing their design function.

The consequences of an accident refer to the impact on both the plant personnel and the public from any radiological release associated with the accident. The EDG supports equipment that is supposed to preclude any radiological release. More restrictive voltage and frequency limits for the output of the EDG restores design margin, and provides assurance that the equipment supplied by the EDG will operate correctly and within the assumed timeframe to perform their mitigating functions.

Until the proposed CR-3 ITS EDG voltage and frequency limits are approved, administratively controlled limits have been established in accordance with Administrative Letter 98-10 to ensure all EDG mitigation functions will be performed in the event of a loss of offsite power. These administrative limits have been determined as acceptable and have been incorporated into the Surveillance test procedures under the provisions of 10 CFR 50.59. Periodic testing has been performed with acceptable results. Since EDGs are mitigating components and are not initiators for any analyzed accident, no increased probability of an accident can occur. Since administrative limits will ensure the EDGs will perform as designed, consequences will not be significantly affected.

(2) *Does not create the possibility of a new or different kind of accident from any accident previously evaluated.*

Administrative voltage limits were established using verified design calculations and the guidance of NRC Administrative Letter 98-10. These administrative limits will ensure the EDGs will perform as designed. No new configuration is established by this change. The administrative limits for the EDG frequency were determined to be sufficient to account for measurement and other uncertainties.

The proposed amendment will place the administrative limits into the CR-3 ITS. The more restrictive voltage and frequency limits will provide additional assurance that the EDG can provide the necessary power to supply the required safety-related loads during an analyzed accident.

The proposed voltage and frequency ITS limits restore the EDG capability to those analyzed. No new configuration is established. Therefore, no new or different kind of

accident from any previously evaluated can be created.

(3) Does not involve a significant reduction in a margin of safety

The LAR proposes to provide more restrictive steady state voltage and frequency limits for the EDGs. The change in the acceptance criteria for specific surveillance testing provides assurance that the EDGs will be capable of performing their design function. Previous test history has shown that the new limits are well within the capability of the EDGs and are repeatable. The frequency "as left" setting will be adjusted such that it remains within a tight band and this assures the "as found" setting will be in the acceptable band. The requirement to adjust the as left frequency setting as well as the limitations on the frequency as left tolerance have been proceduralized to assure the requirement is satisfied.

The proposed ITS limits on voltage and frequency will assure the EDG will be able to perform all design function assumed in the accident analyses. Administrative limits are in place to ensure these parameters remain within analyzed limits. As such, the proposed change does not involve a significant reduction in a margin of safety.

5.0 ENVIRONMENTAL IMPACT EVALUATION

10 CFR 51.22(c)(9) provides criteria for and identification of licensing and regulatory actions eligible for categorical exclusion from performing an environmental assessment. A proposed amendment to an operating license for a facility requires no environmental assessment if the amendment changes a requirement with respect to use of a facility component within the restricted area provided that (i) the amendment involves no significant hazards consideration, (ii) there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite, and (iii) there is no significant increase in individual or cumulative occupational radiation exposure.

Florida Power Corporation (FPC) has reviewed this License Amendment Request (LAR) and has determined that it meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22, no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of the proposed license amendment. The basis for this determination is that for this amendment:

(i) The proposed license amendment does not involve a significant hazards consideration, as described in the significant hazards evaluation.

(ii) As discussed in the Justification for the Request and the No Significant Hazards Evaluation, this change does not result in a significant change or significant increase in the release associated with any Design Basis Accident. The CR-3 ITS voltage and frequency acceptance criteria will become more restrictive and will match the limits that currently reside in plant surveillance procedures. Likewise, there will be no significant change in the types or a significant increase in the amounts of any effluents released offsite during normal operation.

(iii) The proposed amendment does not have any impact on EDG unavailability or performance characteristics. The testing frequency has not changed and the time required to perform the testing is not increased. The EDGs are contained in non plus or minus radioactive areas of the plant, so no exposure concerns exist. Therefore, the proposed LAR does not result in a significant increase to the individual or cumulative occupational radiation exposure.

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50-302/LICENSE NUMBER DPR-72

LICENSE AMENDMENT REQUEST #297, REVISION 0

ATTACHMENT B

PROPOSED TECHNICAL SPECIFICATION PAGE CHANGES

STRIKEOUT AND SHADOWED TEXT FORMAT

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each required offsite circuit.	7 days
SR 3.8.1.2	----------NOTES---------- 1. Performance of SR 3.8.1.6 satisfies this SR. 2. All EDG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 3. A modified EDG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. When modified start procedures are not used, the time, voltage, and frequency tolerances of SR 3.8.1.6 must be met. ---------- Verify each EDG starts from standby conditions and achieves steady state voltage ≥ ~~3933~~ 4077 V and ≤ 4243 ~~4400~~ V, and frequency ≥ ~~58.8~~ 59.1 Hz and ≤ ~~61.2~~ 60.9 Hz.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.6	----------NOTE---------- All EDG starts may be preceded by an engine prelube period. ---------- Verify each EDG starts from standby condition and achieves, in ≤ 10 seconds, voltage ≥ ~~3933~~ 4077 V and ≤ ~~4400~~ 4243 V, and frequency ≥ ~~58.8~~ 59.4 Hz and ≤ ~~61.2~~ 60.6 Hz.	184 days
SR 3.8.1.7	Verify manual transfer of AC power sources from the normal offsite circuit to the alternate offsite circuit.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.10	----------NOTES---------- 1. All EDG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODES 1, 2 or 3. However, credit may be taken for unplanned events that satisfy this SR. 3. Only required to be performed prior to entry into MODE 3. ----------	
	Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ES actuation signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; c. EDG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected emergency loads through load sequencing relays, 3. achieves steady-state voltage ≥ ~~3933~~ 4077 V and ≤ ~~4400~~ 4243 V, 4. achieves steady-state frequency ≥ ~~58.8~~ 59.4 Hz and ≤ ~~61.2~~ 60.6 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes.	24 months

(continued)

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50-302/LICENSE NUMBER DPR-72

LICENSE AMENDMENT REQUEST #297, REVISION 0

ATTACHMENT C

PROPOSED TECHNICAL SPECIFICATION PAGE CHANGES

REVISION BAR FORMAT

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each required offsite circuit.	7 days
SR 3.8.1.2	----------NOTES---------- 1. Performance of SR 3.8.1.6 satisfies this SR. 2. All EDG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 3. A modified EDG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. When modified start procedures are not used, the time, voltage, and frequency tolerances of SR 3.8.1.6 must be met. ---------- Verify each EDG starts from standby conditions and achieves steady state voltage $\geq$ 4077 V and $\leq$ 4243 V, and frequency $\geq$ 59.1 Hz and $\leq$ 60.9 Hz.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.6	----------NOTE---------- All EDG starts may be preceded by an engine prelube period. ---------- Verify each EDG starts from standby condition and achieves, in ≤ 10 seconds, voltage ≥ 4077 V and ≤ 4243 V, and frequency ≥ 59.4 Hz and ≤ 60.6 Hz.	184 days
SR 3.8.1.7	Verify manual transfer of AC power sources from the normal offsite circuit to the alternate offsite circuit.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.10	----------NOTES---------- 1. All EDG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODES 1, 2 or 3. However, credit may be taken for unplanned events that satisfy this SR. 3. Only required to be performed prior to entry into MODE 3. ----------	
	Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ES actuation signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; c. EDG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected emergency loads through load sequencing relays, 3. achieves steady-state voltage ≥ 4077 V and ≤ 4243 V, 4. achieves steady-state frequency ≥ 59.4 Hz and ≤ 60.6 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes.	24 months

(continued)

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50-302/LICENSE NUMBER DPR-72

LICENSE AMENDMENT REQUEST #297, REVISION 0

ATTACHMENT D

LIST OF REGULATORY COMMITMENTS

List of Regulatory Commitments

The following table identifies those actions committed to by Florida Power Corporation (FPC) in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments. Please direct questions regarding these commitments to Mr. Paul Infanger, Supervisor, Licensing & Regulatory Programs at (352) 563-4796.

Regulatory Commitments	Due date/event
Proposed Technical Specification limits for frequency and voltage will be administratively enforced until license amendment is issued.	Procedures are in place and will be maintained until amendment is approved

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50-302/LICENSE NUMBER DPR-72

LICENSE AMENDMENT REQUEST #297, REVISION 0

ATTACHMENT E

PROPOSED REVISED BASES PAGES (FOR INFORMATION ONLY)

BASES

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function. This is consistent with 10 CFR 50, Appendix A, GDC 18 (Ref. 8). Periodic component tests are supplemented by extensive functional tests during outages (under simulated accident conditions). Where the SRs for this LCO specify EDG voltage and frequency tolerances, the following is applicable. The specified steady-state minimum and maximum voltage (4077 VAC - 4243 VAC) and frequency (59.4 Hz - 60.6 HZ) supports ES loads performing their design function and supports acceptable EDG loading. The specified voltage and frequency also support dynamic voltage and frequency dips resulting from motor starting being no greater than 25% and 5% respectively, and voltage and frequency recovering within 3 seconds to within 10% and 2% respectively. The steady-state voltage and frequency values are derived from plant specific calculations. The voltage and frequency dip percentages and the recovery times and transient recovery percentages are derived from the recommendations in Regulatory Guide 1.9, (Ref. 3).

SR 3.8.1.1

This SR ensures proper circuit continuity for the offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its

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SR 3.8.1.1 (continued)

correct position to ensure that distribution buses and loads are connected or are capable of being connected to their preferred power source, and that appropriate independence of offsite circuits is maintained. The 7 day Frequency is adequate since breaker position is not likely to change without the operator being aware of it and because its status is displayed in the control room.

SR 3.8.1.2 and SR 3.8.1.6

These SRs help to ensure the availability of the standby electrical power supply to mitigate DBAs and transients and to maintain the plant in a safe shutdown condition. To minimize wear on moving parts that do not get lubricated when the engine is not running, these SRs are modified by a Note (Note 2 for SR 3.8.1.2) to indicate that all EDG starts for these Surveillances may be preceded by an engine prelube period and followed by a warmup period prior to loading.

For the purposes of SR 3.8.1.2 and SR 3.8.1.6 testing, the EDGs are started from standby conditions. Standby conditions for an EDG means that the diesel engine coolant and oil are being continuously circulated and temperature is being maintained consistent with the manufacturer's recommendations.

SR 3.8.1.6 requires that, at a 184 day Frequency, the EDG starts from standby conditions and achieves required voltage and frequency within 10 seconds. The 10 second start requirement supports the assumptions of the design basis LOCA analysis in the FSAR, Chapter 14 (Ref. 5).

The 10 second start requirement is not applicable to SR 3.8.1.2 (see Note 3) when a modified start procedure is used. If a modified start is not used, the 10 second start requirement of SR 3.8.1.6 applies.

When the modified start procedure is used, the frequency tolerance is $\pm$ 1.5% ($\pm$ 0.9 Hz) due to the setability and repeatability tolerances of the governor high speed limit switch. This larger frequency tolerance for slow starts does not impact the ability of the EDG to start within $\pm$ 1% on emergency starts.

Since SR 3.8.1.6 requires a 10 second start, it is more restrictive than SR 3.8.1.2, and it may be performed in lieu of SR 3.8.1.2. This is the intent of Note 1 of SR 3.8.1.2.

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