Florida Power & Light Company, 9760 SW 344 St., Florida City, FL 33035

FPL

L-2002-071
10 CFR 54

APR 19 2002

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Response to NRC Guidance on Scoping of Equipment Relied on to Meet the Requirements of the Station Blackout Rule for License Renewal

By letter dated April 1, 2002, the NRC issued a staff position on scoping of equipment relied on to meet the requirements of the Station Blackout (SBO) Rule (10 CFR 50.63) for License Renewal. The position states "consistent with the requirements specified in 10 CFR 54.4(a)(3) and 10 CFR 50.63(a)(1), the plant system portion of the offsite power system should be included within the scope of license renewal." The letter states that implementation of this staff position will start with the license renewal applications currently under review.

SBO scoping performed for the Turkey Point License Renewal Application (LRA) did not identify restoration of offsite power to be relied on or required under the SBO Current Licensing Basis for Turkey Point. This conclusion was consistent with the conclusions reached by all previous license renewal applicants, including those which had already received their licenses. Additionally, there were no technical issues, requests for additional information, or Safety Evaluation Report open items related to SBO scoping identified during the Turkey Point LRA review. By telephone on April 2, 2002, however, FPL was notified by the NRC staff that FPL would have to address the NRC position attached to their April 1, 2002 letter with regard to the LRA review for Turkey Point.

Attachment 1 provides FPL's response to the April 1, 2002 NRC position regarding SBO scoping for license renewal, including the identification of additional components to be included in the scope of license renewal, aging effects requiring management, and aging management programs, as applicable.

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Based on FPL's response, FPL requests that this issue be closed and that a supplemental SER be issued as expeditiously as possible.

Should you have any further questions, please contact S. T. Hale at (305) 246-6090.

Very truly yours,

John P. McElwain
Vice President - Turkey Point

JPM/STH
Attachment (1)

Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251

Response to Request for Additional Information for the Review of the Turkey Point Units 3 and 4, License Renewal Application

STATE OF FLORIDA)
) ss
COUNTY OF MIAMI-DADE)

John P. McElwain being first duly sworn, deposes and says:

That he is Vice President - Turkey Point of Florida Power and Light Company, the Licensee herein;

That he has executed the foregoing document; that the statements made in this document are true and correct to the best of his knowledge, information and belief, and that he is authorized to execute the document on behalf of said Licensee.

John P. McElwain

Subscribed and sworn to before me this

19th day of April, 2002.

Olga Hanek

Olga Hanek
Name of Notary Public (Type or Print)

John P. McElwain is personally known to me.

cc: U.S. Nuclear Regulatory Commission, Washington, D.C.

Chief, License Renewal and Standardization Branch
Project Manager - Turkey Point License Renewal
Project Manager - Turkey Point

U.S. Nuclear Regulatory Commission, Region II
Regional Administrator, Region II, USNRC
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ATTACHMENT 1
RESPONSE TO NRC POSTION ON SBO SCOPING
ATTACHED TO NRC LETTER DATED APRIL 1, 2002

NRC Position:

The NRC position states "Consistent with the requirements specified in 10 CFR 54.4(a)(3) and 10 CFR 50.63(a)(1), the plant system portion of the offsite power system should be included within the scope of license renewal." Further clarification is provided which states "...the staff has determined that the plant system portion of the offsite power system that is used to connect the plant to the offsite power source should be included within the scope of the rule. This path typically includes the switchyard circuit breakers that connect to the offsite system power transformers (startup transformers), the transformers themselves, the intervening overhead or underground circuits between circuit breaker and transformer and transformer and onsite electrical distribution system, and the associated control circuits and structures."

FPL Response:

Specific references regarding the Station Blackout (SBO) Current Licensing Basis (CLB) for Turkey Point include UFSAR Section 8.2.2.2, and references 2.1-8, 2.1-9, and 2.1-10 listed in Subsection 2.1.5 (page 2.1-20) of the Turkey Point License Renewal Application (LRA). Based on these references, SBO scoping for the Turkey Point LRA did not identify restoration of offsite power to be relied on or required under the SBO CLB for Turkey Point. Systems relied on for restoration of onsite power, however, were included in the scope of license renewal. Electrical systems identified as within the scope of license renewal for SBO included 125 VDC and 120 VAC, 4.16 kV, 480 V Switchgear and 480 V Motor Control Centers, Communications, Plant Lighting, Emergency Load Sequencers, and the Emergency Diesel Generators.

FPL contends that restoration of offsite power is not relied on to meet the requirements of the SBO Rule for Turkey Point. However, based on specific direction from the NRC, FPL has performed an evaluation to determine the additional structures and components that are in the scope of license renewal for restoration of offsite power at Turkey Point, consistent with the NRC position. For those structures and components determined to be within the scope of license renewal and requiring an aging management review (AMR), an AMR evaluation was performed based upon existing Turkey Point AMRs of the same materials and exposed to the same environment. Also, a comparison of the materials and environments associated with the additional Turkey Point electrical SBO components to that of similar components at Duke Energy's Oconee Nuclear Plant was performed to

identify any differences influencing aging effects requiring management. The results of this evaluation are presented below.

Although there are instrumentation and control cables associated with the restoration of offsite power, FPL has determined that these cables would not have to be relied on to perform a function to recover from an SBO event at Turkey Point Units 3 and 4. The circuit breakers in the switchyard which feed the Startup Transformers are Siemens Sulfur Hexafluoride (SF_6) Gas with hydraulic control. The breakers closing and tripping functions are performed by stored hydraulic pressure provided by AC powered hydraulic pumps. If AC power to the hydraulic pumps is not available, the circuit breaker hydraulic system in each breaker would have enough stored energy to be able to close and/or trip the circuit breaker several times. In addition, the pole interrupters (main contacts) on the circuit breakers are located in the breaker enclosures and controlled by DC. If DC power is unavailable, the interrupters (main contacts) could be closed manually (one pole at a time) at the breaker enclosures. Finally, permissives to these circuit breakers could be bypassed during an SBO event. While it is preferred to have these controls and permissives available, safety is ensured for manual operation of these breakers because of the following:

- The condition which is assumed to initiate the loss of offsite power portion of the SBO event would be unrelated to the startup transformer circuit, considering the circuit is not aligned and energized during normal operation. Accordingly, the circuit should be clear and ready for use.

- An alternate AC source will be aligned to one of the 4 kV buses on the SBO unit, which will in turn be energized and supplying power to SBO coping equipment, within ten minutes of determination of an SBO condition and for eight hours thereafter. This provides sufficient time, upon discovery that control power is unavailable to the subject circuit breakers, to confirm that the startup transformer circuit is clear and ready to be manually aligned.

- The alternate AC sources at Turkey Point Units 3 and 4 meet the NRC definition of fully capable, and each has significant excess capacity (the worst-case scenario, or the least excess capacity, is 439 kW). This provides additional margin beyond the eight hour coping duration to clear any significant startup transformer circuit conditions to allow safe manual operation.

Based on the above, the operation of the breakers could be done without both AC and DC power available and as such, the control cables associated with these circuit breakers do not have to be relied on to perform a function to recover from an SBO event at Turkey Point Units 3 and 4.

Consistent with the NRC position, the additional electrical components included in the scope of license renewal as meeting the scoping criteria of 10 CFR 54.4(a)(3) for restoration of offsite power are as follows:

1. Circuit breakers and switches to connect the Startup Transformer circuits to the grid.
2. Aluminum conductor steel reinforced (ACSR) transmission conductors, bus bar connecting the circuit breakers to the Startup Transformers, and connections.
3. Insulators associated with the transmission conductors.
4. Startup Transformers.

Based on the guidance in NEI 95-10, the circuit breakers, switches and Startup Transformers do not require an aging management review because they are considered active components. An AMR evaluation of the remaining electrical components is presented below.

The aging effects for transmission conductors requiring evaluation are loss of conductor strength and those associated with vibration. The most prevalent mechanism contributing to loss of conductor strength of an ACSR transmission conductor is corrosion, which includes corrosion of the steel core and aluminum strand pitting. Corrosion of ACSR conductors is a very slow acting aging effect. Degradation begins as a loss of zinc from the galvanized steel core wires with corrosion rates dependent largely on air quality, which includes suspended particles chemistry, SO_2 concentration in air, precipitation, fog chemistry and meteorological conditions.

The National Electrical Safety Code (NESC) requires that tension on installed conductors be a maximum of 60% of the ultimate conductor strength. The NESC also sets the maximum tension a conductor must be designed to withstand under heavy load requirements, which includes consideration of ice, wind and temperature. The Turkey Point Units 3 and 4 conductors are 1431 kcmil ACSR and they are designed and installed in accordance with NESC.

Tests performed by Ontario Hydroelectric showed a 30% loss of composite conductor strength of an 80-year-old ACSR conductor due to corrosion. Assuming a 30% loss of strength, there would still be significant margin between what is required by the NESC and the actual conductor strength.

Based on the above, loss of material strength of the Turkey Point Units 3 and 4 ACSR transmission conductors is not an aging effect requiring management for the period of extended operation. This is further supported by the fact that FPL has been installing and maintaining transmission conductors on its transmission system for

more than 60 years and has not had to replace any conductors due to aging problems.

Transmission conductor vibration would be caused by wind loading. Wind loading that can cause a transmission line and insulators to vibrate is considered in the design and installation. Thus, loss of material (wear) and fatigue that could be caused by transmission conductor vibration or sway are not aging effects requiring management for the period of extended operation for Turkey Point Units 3 and 4.

In order to validate aging effects and to assure no additional aging effects exist beyond those discussed above, a review of industry experience was performed. This review included NRC generic communications and industry operating experience related to transmission conductors.

Turkey Point Units 3 and 4 operating experience was also reviewed to validate aging effects for transmission conductors. This review included non-conformance reports, licensee event reports, and condition reports for any documented instances of transmission conductor aging, in addition to interviews with responsible transmission engineering personnel. No unique aging effects were identified from this review beyond those identified above.

Aging effects for insulators requiring evaluation are surface contamination and loss of material.

Various airborne materials such as dust, salt and industrial effluents can contaminate insulator surfaces. The buildup of surface contamination is gradual and in most areas such contamination is washed away by rain; the glazed insulator surface aids this contamination removal. A large buildup of contamination enables the conductor voltage to track along the surface more easily and can lead to insulator flashover.

Turkey Point Units 3 and 4 are located on a shallow bay and are not subject to a harsh salt environment primarily due to the lack of wave action. Additionally, periodic rainfall tends to wash away any salt deposits from surfaces. Consequently, the rate of contamination buildup on the insulators is not significant. Therefore, surface contamination of the Turkey Point Units 3 and 4 insulators is not an aging effect requiring management for the period of extended operation.

Loss of material due to mechanical wear is an aging effect for strain and suspension insulators if they are subject to significant movement. Movement of the insulators can be caused by wind blowing the supported transmission conductor, causing it to swing from side to side. If this swinging is frequent enough, it could cause wear in

the metal contact points of the insulator string and between an insulator and the supporting hardware. Although this mechanism is possible, industry experience has shown that transmission conductors do not normally swing and that when they do, due to a substantial wind, do not continue to swing for very long once the wind has subsided. Wear has not been identified during routine inspections of the Turkey Point Units 3 and 4 insulators. Therefore, loss of material due to wear of the Turkey Point Units 3 and 4 insulators is not an aging effect requiring management for the period of extended operation.

In order to validate aging effects and to assure no additional aging effects exist beyond those discussed above, a review of industry experience was performed. This review included NRC generic communications and industry operating experience related to transmission insulators. The following document related to insulators was identified in this review:

- IN 93-95, Storm-Related Loss of Offsite Power Events Due to Salt Buildup on Switchyard Insulators.

No unique aging effects were identified as a result of this review beyond those identified above.

Turkey Point Units 3 and 4 operating experience was also reviewed to validate aging effects for transmission insulators. This review included non-conformance reports, license event reports, and condition reports for any documented instances of transmission insulator aging, in addition to interviews with responsible transmission engineering personnel. No unique aging effects were identified from this review beyond those identified above.

Based on the discussions above, the AMR results for electrical components required for restoration of offsite power are as follows:

TABLE 1
ADDITIONAL ELECTRICAL COMPONENTS REQUIRED
FOR RESTORATION OF OFFSITE POWER FOR SBO

Component	Intended Function	Material[2]	Oconee Environment	Turkey Point Units 3 and 4 Environment[1]	Aging Effects Requiring Management	Program/ Activity
Transmission conductors, bus bar, connections	To electrically connect specified sections of an electrical circuit to deliver voltage, current, or signal	Aluminum conductor steel reinforced (ACSR), Copper, bronze	Outdoor 105°F(40.6°C), Negligible radiation, Precipitation	Outdoor 104°F(40°C), Negligible radiation, Precipitation	None	None required
Transmission insulators	To electrically isolate and provide structural support to transmission conductors	Porcelain, Aluminum, Cement	Outdoor 105°F(40.6°C), Negligible radiation, Precipitation	Outdoor 104°F(40°C), Negligible radiation, Precipitation	None	None required

Note 1 Although the Turkey Point site is on a saltwater bay in lieu of a lake, it is not exposed to a harsh salt environment primarily due to the lack of wave action in the bay. Additionally, periodic rainfall tends to wash away any salt deposits from surfaces. Other differences with the Oconee environment are considered negligible.

Note 2 Same material as the Oconee Station. The copper and bronze material, although not installed in the switchyard at the Oconee Station, were evaluated for the same environment in the Oconee license renewal application.

Based upon the similarity of materials and environments between Turkey Point Units 3 and 4 and the Oconee Station, and a review of industry information, NRC generic communications and Turkey Point operating experience, there are no aging effects requiring management for transmission conductors, bus bar, connections, and transmission insulators for the extended period of operation. Therefore, no aging management is necessary.

Consistent with the NRC position, the additional structural components included in the scope of license renewal as meeting the scoping criteria of 10 CFR 54.4(a)(3) for restoration of offsite power are as follows:

1. Startup Transformer circuit breaker foundations in the Switchyard.
2. Startup Transformer circuit breaker electrical enclosures in the Switchyard.
3. Transmission towers in the Switchyard and Yard Structures.

4. Transmission tower foundations in the Switchyard and Yard Structures.
5. Startup Transformer foundations in Yard Structures.

An AMR evaluation of these components based on AMRs of Turkey Point components of the same materials exposed to the same environments previously reviewed and accepted by the NRC, yields the results presented below in two tables (one for each structure).

TABLE 2
SWITCHYARD ADDITIONAL STRUCTURAL COMPONENTS
REQUIRED FOR RESTORATION OF OFFSITE POWER FOR SBO

Component	Intended Function	Material	Environment	Aging Effects Requiring Management	Program/ Activity
Startup Transformer circuit breaker foundations	Provide structural support for components required for SBO	Concrete	Outdoor	Concrete degradation[1]	Systems and Structures Monitoring Program
Startup Transformer circuit breaker electrical enclosures	Provide structural support/ shelter for components required for SBO	Carbon steel	Outdoor	Loss of material	Systems and Structures Monitoring Program
Transmission towers	Provide structural support for components required for SBO	Galvanized carbon steel	Outdoor	None	None required
Transmission tower foundations	Provide structural support for components required for SBO	Concrete	Outdoor	Concrete degradation[1]	Systems and Structures Monitoring Program

Note 1 The aging management reviews performed by FPL on above groundwater reinforced concrete did not identify any aging effects requiring management, however FPL has committed to inspect accessible surfaces of above groundwater reinforced concrete structures and structural components for concrete degradation.

TABLE 3
YARD STRUCTURES ADDITIONAL STRUCTURAL COMPONENTS REQUIRED FOR RESTORATION OF OFFSITE POWER FOR SBO

Component	Intended Function	Material	Environment	Aging Effects Requiring Management	Program/ Activity
Transmission towers	Provide structural support for components required for SBO	Galvanized carbon steel	Outdoor	None	None required
Transmission tower and startup transformer foundations	Provide structural support for components required for SBO	Concrete	Outdoor	Concrete degradation[1]	Systems and Structures Monitoring Program

Note 1 The aging management reviews performed by FPL on above groundwater reinforced concrete did not identify any aging effects requiring management, however FPL has committed to inspect accessible surfaces of above groundwater reinforced concrete structures and structural components for concrete degradation.

Conclusion

Based on the above, the scope of the Systems and Structures Monitoring Program has been revised to include the components as noted above.

The evaluation presented above addresses the position issued by the NRC staff on April 1, 2002 regarding scoping for SBO for license renewal. As a result, FPL requests that this issue be closed, and that a supplemental SER be issued as expeditiously as possible.