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L-2011-306
10 CFR 50.90

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 2055-0001

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Proposed Change to Turkey Point Technical Specifications
Regarding D.C. Sources Surveillance Requirements
Revised License Amendment Request (LAR) No. 210

Pursuant to 10 CFR 50.90, Florida Power & Light (FPL) hereby requests a License Amendment to Operating Licenses DPR-31 and DPR-41 for Turkey Point Units 3 and 4. The proposed amendment would modify Technical Specification (TS) Surveillance Requirements (SR) 4.8.2.1 pertaining to periodic verification of battery bank capacity and intercell and connection resistance. FPL requests approval of the proposed amendment prior to August 2012, with the amendment being implemented within 90 days of its receipt by FPL. There are no new commitments made in this submittal. This submittal revises the original License Amendment Request submitted March 3, 2011 (L-2011-072). The NRC Project Manager suggested that FPL revise the original License Amendment and resubmit the proposed changes to be more in line with changes that the NRC has approved for other plants to add additional margin.

The Enclosure to this letter contains a description of the proposed changes and includes a no significant hazards determination and environmental considerations.

The proposed changes have been evaluated in accordance with the criteria in 10 CFR 50.92(c) and FPL has determined that the proposed changes do not involve a significant hazards consideration.

The Turkey Point Plant Nuclear Safety Committee (PNSC) has reviewed the proposed license amendments. In accordance with 10 CFR 50.91(b)(1), a copy of this letter is being forwarded to the State Designee of Florida.

Should you have any questions regarding this submittal, please contact Mr. Robert J. Tomonto, Licensing Manager, at 305-246-7327.

I declare under penalty of perjury that the foregoing is true and correct.

A001
NRR

Executed on August 10, 2011

Very truly yours,

Michael Kiley
Vice President
Turkey Point Nuclear Plant

Enclosure

cc: USNRC Regional Administrator, Region II
USNRC Project Manager, Turkey Point Nuclear Plant
USNRC Senior Resident Inspector, Turkey Point Nuclear Plant
Mr. W. A. Passetti, Florida Department of Health

Turkey Point Units 3 and 4

REVISED LICENSE AMENDMENT REQUEST NO. 210 PROPOSED CHANGE TO TURKEY POINT TECHNICAL SPECIFICATIONS REGARDING D.C. SOURCES SURVEILLANCE REQUIREMENTS

ENCLOSURE

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LICENSE AMENDMENT REQUEST

PROPOSED CHANGE TO TURKEY POINT TECHNICAL SPECIFICATIONS REGARDING D.C. SOURCES SURVEILLANCE REQUIREMENTS

1.0 Background

Florida Power and Light Company (FPL) proposes to revise the Turkey Point (PTN) Units 3 and 4 licensing basis by amending Technical Specification (TS) Surveillance Requirement (SR) 4.8.2.1 to incorporate the enclosed TS revisions. The proposed TS changes would revise TS SR 4.8.2.1 by providing lower micro-ohm limits for inter-cell and transition cable connections and a total battery connection resistance limit for the 60 cell battery configurations.

The NRC 2008 CDBI audit requested documentation demonstrating that the Safety Related (SR) battery calculation of record accounts for the inter-cell resistance. The safety related battery voltage drop calculation of record is based on the inter-cell resistance acceptance criteria values established in plant maintenance surveillance procedures, which are lower than the ≤ 150 micro-ohms value established in TS SR 4.8.2.1. The requested TS SR revised battery cell connection resistance values (identified in this document) are based on past battery surveillances measured resistance values for clean, tight connections plus a small margin (5 to 7 micro-ohms).

During the engineering review of the safety related battery sizing calculation, it was also identified that Battery 4D03 / 4B and Battery D52 / Spare (when used in place of Battery 4B) are sized with an aging factor less than the IEEE standard 20 years (Aging Factor 125%). The basis / intent of TS SR 4.8.2.1.e and f battery service life and capacity values are based on an Aging Factor of 125% / 20 year life expectancy design. Thus, the 85% of service life value in TS SR 4.8.2.1.e and a battery discharge capacity value of at least 80% of manufacturer's rating in TS SR 4.8.2.1.f are considered non-conservative. This evaluation provides the basis for requesting that the TS SR 4.8.2.1.e and f battery performance discharge test service life and capacity acceptance values be revised to values based on the 115% aging factor /18.6 years (worst case), established in the battery calculation, for Battery 4D03 / 4B and Battery D52 / Spare (when used in place of Battery 4B). Batteries 4B and D52 / Spare are presently ≥ 100% of manufacturer rating capacity which is well above the required design basis loading capacity. The other safety related batteries are sized with an Aging Factor of 125% / 20 years. In addition, this request also reduces the time frame of TS SR 4.8.2.1.e from 18 months to 12 months for all batteries. This provides for more frequent surveillances of a battery showing signs of degradation.

In a call held with the NRC staff, they had two questions about LAR 210. The first question dealt with the technical basis for the 18 month surveillance instead of 12 months for TS SR 4.8.2.1.e, consistent with IEEE 450-1995. PTN was designed to IEEE 450-1987. The 18 month requirement was required prior to PTN installing a spare battery to allow battery testing on-line in 1991. This LAR includes reducing the test period of TS SR 4.8.2.1.e from 18 months to 12 months for all batteries. The second question dealt with the technical basis for a 30 minute service and performance test for demonstrating

the capability of the safety related batteries to provide power in accordance with the plant's Technical Specifications, as stated in the UFSAR.

The technical basis is provided in an Engineering Evaluation, where the 30 minute time period only applies to service testing (performance testing is a minimum of 2 hours) and the UFSAR wording is being revised to clarify the intent. The service testing time period is not a stated / specified requirement in the battery Technical Specifications. Thus, no changes are being requested to TS SR 4.8.2.1 in regards to this item.

2.0 Description

- Request to revise TS SR 4.8.2.1 by providing lower micro-ohms limits for inter-cell and transition cable connections and a total battery connection resistance limit for the 60 cell battery configurations.

- Request to revise the 18 and 60 month battery performance discharge test service life and capacity acceptance values of TS SR 4.8.2.1.e and f for Batteries 4B and D52 / Spare (when used in place of Battery 4B) to values based on the 115% aging factor / 18.6 years (worst case – D52) established in the battery calculation / design. In addition, this request also reduces the time schedule of TS SR 4.8.2.1.e from 18 months to 12 months for all batteries.

Proposed Technical Specification Surveillance Requirement Changes:

The applicable wording in the affected sections of TS SR 4.8.2.1 currently read:

b. At least once per 92 days and within 7 days after a battery discharge with battery terminal voltage below 105 volts (108.6 volts for spare battery D-52), or battery overcharge with battery terminal voltage above 143 volts, by verifying that:

   2) There is no visible corrosion of either terminals or connectors, or the connection resistance is less than 150 x10^{-6} ohms, and

c. At least once per 18 months by verifying that:

   3) The resistance of each cell-to-cell and termination connection is less than or equal to 150 x10^{-6} ohms, and

e. At least once per 18 months, during shutdown**, by giving performance discharge tests of battery capacity to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.

f. At least once per 60 months, during shutdown**, by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. Once per 60-month interval this performance discharge test may be performed in lieu of the battery service test required by Specification 4.8.2.1.d.

After approval of the proposed license amendment, the wording in TS SR 4.8.2.1 would read as follows:

b. At least once per 92 days and within 7 days after a battery discharge with battery terminal voltage below 105 volts (108.6 volts for spare battery D-52), or battery overcharge with battery terminal voltage above 143 volts, by verifying that:

2) There is no visible corrosion of either terminals or connectors, **or verify battery connection resistance is:**

Battery	**Connection**	**Limit (micro-ohms)**
3B, 4A	**inter-cell / termination**	**≤ 29**
	inter-cell (brace locations)	**≤ 30**
	transition cables	**≤ 125**
	or	
	total battery connections	**≤ 1958**
3A, 4B, D-52	**inter-cell / termination**	**≤ 35**
	inter-cell (brace locations)	**≤ 40**
	transition cables	**≤ 125**
	or	
	total battery connections	**≤ 2463**

c. At least once per 18 months by verifying that:

3) Battery connection resistance is:

Battery	**Connection**	**Limit (micro-ohms)**
3B, 4A	**inter-cell / termination**	**≤ 29**
	inter-cell (brace locations)	**≤ 30**
	transition cables	**≤ 125**
	or	
	total battery connections	**≤ 1958**
3A, 4B, D-52	**inter-cell / termination**	**≤ 35**
	inter-cell (brace locations)	**≤ 40**
	transition cables	**≤ 125**
	or	
	total battery connections	**≤ 2463**

e. At least once per **12** months, during shutdown**, by giving performance discharge tests of battery capacity to any battery that shows signs of degradation or has reached 85% **[75% for Batteries 4B and D52 (Spare) when used in place of Battery 4B]** of service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% **[7% for Batteries 4B and D52 (Spare) when used in place of Battery 4B]** of rated capacity from its average on previous performance tests, or is below 90% **[93% for Batteries 4B and D52 (Spare) when used in place of 4B]** of the manufacturer's rating.

f. At least once per 60 months, during shutdown**, by verifying that the battery capacity is at least 80% **[87% for Batteries 4B and D52 (Spare) when used in place of Battery 4B]** of the manufacturer's rating when subjected to a performance discharge test. Once per 60-month interval this performance discharge test may be performed in lieu of the battery service test required by Specification 4.8.2.1.d.

3. Evaluation

Design Basis Requirements

System design requirements for the station DC power sources for Turkey Point Units 3 and 4 are provided in the UFSAR and Turkey Point Vital AC/DC System Design Basis Document. The following are applicable excerpts.

Applicable Regulatory Commitments

The Technical Specifications (TSs) ensure the operational capability of structures, systems and components that are required to protect the health and safety of the public. The U.S. Nuclear Regulatory Commission's (NRC's) requirements related to the content of the TSs are contained in Section 50.36 of Title 10 of the Code of Federal Regulations (10 CFR 50.36) which requires that the TSs include items in the following specific categories: (1) Safety Limits, Limiting Safety Systems Settings, and Limiting Control Settings; (2) Limiting Condition for Operation; (3) Surveillance Requirements; (4) Design Features; and (5) Administrative Controls.

This amendment is related to the third category, surveillance requirements per 10 CR 50.36(c)(3).

The following regulatory requirements and guidelines documents apply to the affected DC sources:

Turkey Point Units 3 and 4 were designed prior to the implementation of 10 CFR 50, Appendix A, General Design Criteria (GDC) for Nuclear Power Plants, and utilized the criteria of 1967 proposed GDC 39, Emergency Power for Engineered Safety Features, in the design of the site electric power systems. Subsequently, 1967 proposed GDC 39 was

implemented in 1971 as GDC 17, Electric Power Systems, and established more specific requirements than previously identified. An evaluation of the site electrical system design was performed in 1982 and concluded (Reference: FPL letter L-82-509, November 16, 1982) that Turkey Point complies with the requirements of GDC 17.

Criteria: 1. 1967 Proposed GDC 39

"Alternate power systems shall be provided and designed with adequate independency, redundancy, capacity and testability to permit the functioning required of the engineered safety features. As a minimum, the onsite power system and the offsite power system shall each, independently, provide this capacity assuming a failure of a single active component in each system."

2. GDC 17, Electric Power Systems

In order to satisfy the above criteria, independent alternate power systems are provided for each unit. These alternate power systems have adequate capacity to supply the power required for engineered safety features and protection systems. The following normal, standby and emergency power sources are available:

1. The source of auxiliary power during normal operation is the main generator and switchyard. The auxiliary transformer is connected to the generator isolated phase bus and the C bus transformer is connected to the switchyard. Both supply power to the 4.16 kV system.
2. Standby power during unit startup, shutdown and after unit trip is supplied from a startup transformer and a C bus transformer, which are connected to the switchyard 240 kV bus and feed the 4.16 kV system.
3. Four Emergency Diesel Generators (EDGs) supply emergency power. Each EDG is connected to a separate power train, two per unit. With any credible single failure, the EDGs are capable of assuring a safe shut down of both units with a loss of offsite power concurrent with Maximum Hypothetical Accident (MHA) conditions in one unit.
4. Emergency power for vital instrumentation and controls is supplied from four 125V DC station batteries. Each is capable of feeding its associated load for two hours without charging. A spare 125V DC Station Battery is also provided which can be substituted for any of the four 125V DC Station Batteries to allow for maintenance or testing.
5. For each unit, a non-safety related 125V DC bus provides power to the non-safety related C-bus 4.16 kV and 480V switchgear, C-bus transformer relay panels and the turbine emergency oil pumps.

UFSAR:

Section 8.1.1 states that: "Each (battery) is capable of feeding its associated load for two hours without charging. A spare 125V DC Station Battery is also provided which can be substituted for any of the four 125V DC Station Batteries to allow for maintenance or testing."

Section 8.2.2.3 of the UFSAR describes the station DC power systems. Emergency power for vital instrumentation and controls is supplied by a station DC power system that contains five safety related 125V batteries and four DC distribution panels. Two battery banks are associated with each unit, one 1800 Ampere-Hour (AH) and one 1200 AH (all ratings are for 8 hours at 77^{o}F). Each 1800 AH battery bank has two safety related full capacity 400 Ampere solid-state battery chargers associated with it, while each 1200 AH has two safety related full capacity 300 Ampere solid-state battery chargers associated with it. The spare battery bank is normally isolated from the vital DC buses and maintained in a fully charged condition by a non-safety related battery charger. The spare 1945 AH station battery is an equivalent source for any of the four station batteries during maintenance or testing, and allows continuous operation of the units without entering into a Limiting Condition for Operation while performing these functions.

Each battery has been sized to support operation of its required loads for two hours without terminal voltage falling below its minimum required value. The capability of the safety related batteries to provide required power is demonstrated by the performance of 30 minute service and performance tests in accordance with the plant's Technical Specifications. This service testing time of 30 minutes is conservatively based on the time required to manually load a charger during a station blackout event. Note: The 30 minute time frame only applies to service testing (not associated with performance testing). Performance testing is done for 2 hours by plant procedures. In addition, the 30 minute time frame is not a requirement of Technical Specifications. The UFSAR is being revised to clarify the statement.

Design Basis Document (DBD) 5610-003-DB-002 "Vital AC/DC System"

Each battery shall be capable of providing power to its loads for 30 minutes during a Loss of Offsite Power event, without the battery terminal voltage falling below 105 volts for 3D03, 4D03 and 4D24; below 105.59 volts for battery 3D24; and below 108.6 volts for battery D52. . The loads on each battery during a Loss of Offsite Power (LOOP) event are specified in Appendix 3A of this document.

Each battery required to provide power source to the Auxiliary Feedwater System pump trains shall provide power to the Auxiliary Feedwater pump train for at least two hours during a loss of all offsite and onsite AC power to assure operation of one Auxiliary Feedwater System pump train. This is a post-TMI commitment.

Each battery shall be sized to provide power to its loads for two hours during a design basis accident concurrent with a Loss of Offsite Power (LOOP) without terminal voltage falling below 105 volts for batteries 3D03, 4D03 and 4D24; below 105.59 volts for battery 3D24; and below 108.6 volts for battery D52.

Each battery shall be load tested in accordance with Technical Specifications 4.8.2.1.d, 4.8.2.1.e and 4.8.2.1.f to demonstrate its capability to provide power to its loads following a LOOP without the terminal voltage falling below 105 volts for batteries 3D03, 4D03 and 4D24; below 105.59 volts for battery 3D24; and below 108.6 volts for battery D52.

Request to revise TS SR 4.8.2.1.b.2 and c.3 by providing lower micro-ohms limits for inter-cell and transition cable connections and a total battery connection resistance limit.

The safety related battery voltage drop calculation of record is based on the Maintenance Allowable Limit Value (MALV) inter-cell resistance acceptance criteria values established in plant maintenance surveillance procedures, which are lower than the ≤ 150 micro-ohm value established in TS SR 4.8.2.1. The calculation shows compliance with the design basis requirements of the safety related battery system. However, the requested change is necessary since the parameters currently specified in the TS SRs do not, by themselves, ensure that the batteries will be maintained in a condition such that they are able to perform their safety function, since the total battery resistance (based on TS SR ≤ 150 micro-ohm connections) could exceed the value of total battery resistance used in the load and voltage calculation.

The requested TS SR revised battery cell connection resistance values (identified in the design basis document) are based on past battery surveillances measured resistance values for clean, tight battery cell connections plus a small margin (5 to 7 micro-ohms, approximately 20%). The margin is consistent with the intent of IEEE 450-1987 which requires increases in connection resistance greater than 20% to be disassembled, cleaned, reassembled and retested. The TS SR total battery connection limit is derived from the summation of the individual battery inter-cell and transition connections resistance values (identified in the design basis document) for the respective battery and is enveloped by the battery load and voltage calculation.

The vendor (GNB) performance data (fan curves) accounts for inter-cell connector resistance (i.e., cells are connected in series during testing) that is used in Turkey Point Units 3 and 4 battery calculation of record. However, the vendor does not record the inter-cell connector resistance during battery testing. It can be conservatively assumed that the vendor connector resistance during testing was as least as good as the baseline value for a clean, tight connection established in Turkey Point Units 3 and 4 battery procedures 0-SME-003.03, 003.4 and 003.15. The calculation also includes the MALV margin (5 to 7 micro-ohms) above the baseline resistance value for a proper connection, since it is not considered accounted for in the battery data performance curve. Resistances for cable transition connections are also included in the calculation. Thus, all

cell connector resistances are accounted for in the battery calculation. The battery calculation demonstrates compliance with the licensing design basis requirements of the battery system. A summary of the applicable results as taken from Calculation PTN-BFJE-94-002 is provided in Attachment 2.

Turkey Point Units 3 and 4 battery maintenance procedures 0-SME-003.03 (Battery Quarterly Maintenance), 003.4 (Battery Refueling Interval Maintenance) and 003.15 (Battery Monthly Maintenance), ensure that all battery terminations are clean, properly torqued and meet the MALV for resistance. The TS SR battery discharge and capacity testing demonstrates that the battery is capable of meeting the Turkey Point Units 3 and 4 licensing design basis requirements. Therefore, satisfactory results of the TS SR battery discharge and capacity testing inherently validates the acceptability of the intercell connections. Thus, revising TS SR 4.8.2.1 by providing lower micro-ohms limits for inter-cell and transition cable connections and a total battery connection resistance limit ensures that the batteries are maintained such they are capable of performing their safety function and meeting the Turkey Point Units 3 and 4 licensing design basis requirements.

Based on the above evaluation, the proposed change to TS SR 4.8.2.1 by providing lower micro-ohms limits for inter-cell and transition cable connections and a total battery connection limit improves the capability of the surveillance to detect a battery condition that is not in compliance with its' licensing design basis requirements.

Request to revise the 18 and 60 month battery performance discharge test service life and capacity acceptance values for TS SR 4.8.2.1.e and f for Batteries 4B and D52 / Spare (when used in place of Battery 4B) consistent with the battery design basis calculation. In addition, reduce the time frame of TS SR 4.8.2.1.e from 18 to 12 months.

The safety related battery sizing calculation identifies that Battery 4B / 4D03 and Battery D52 / Spare (when used in place of Battery 4B) are sized to an aging factor of 115% / 18.6 years (worst case - spare) instead of the IEEE Standard 485-1997 of 20 years (Aging Factor 125%). The other safety related batteries are sized to meet IEEE standard 20 years (Aging Factor 125%). The TS SR 4.8.2.1.e and f battery service life and capacity values are based on a 125% aging factor / 20 year life expectancy design in accordance with the IEEE Standard. Thus, the 85% of service life value in TS SR 4.8.2.1.e and a battery discharge capacity value of at least 80% of manufacturer's rating in TS SR 4.8.2.1.f are considered non-conservative for Batteries 4B and D52 / Spare (when used in place of Battery 4B). This evaluation provides the basis for requesting that the 18 and 60 month battery TS SR performance discharge test service life and capacity acceptance values be revised to reflect an Aging Factor of 115% / 18.6 year life for Battery 4B / 4D03 and Battery D52 / Spare as established in the battery calculation. The TS SR values for the other safety related batteries will remain unchanged. In addition, this request also reduces the time frame of TS SR 4.8.2.1.e from 18 months to 12 months for all batteries. This provides for more frequent surveillances of a battery showing signs of degradation.

IEEE 485-1997 recommends the use of an aging factor of 1.25 (125%) when initially sizing a battery. The aging factor of 125% ensures that at least 80% of battery nameplate capacity will be available at the end of its' expected battery life and this will be sufficient to serve 100% of the design load. The aging factor essentially oversizes the required number of positive plates per battery cell in a battery bank to ensure that the duty cycle load profile of the battery is met throughout the expected 20 year life of the battery. The vendor's typical expected battery life curve indicates a 100% battery capacity over the initial 14 years. The capacity then decreases to 80% at the end of the expected 20-year life at which point the battery bank is recommended for replacement per IEEE 450-1995. An aging factor of 1.15 (115%) essentially reduces the battery service life to 18.6 years during which time the battery would have sufficient capacity to provide 100% of the power requirements for the design load.

Review of the current surveillance test results show that both batteries Spare (D52) and 4B (4D03) are ≥ 100% of rating. Battery D52 / Spare is in its first year and Battery 4B is in its 10^{th} year, well within the 18 years of the expected designed service life.

The proposed change to TS SR 4.8.2.1.e, changes the service life value for increased monitoring from 85% / 17 years (20 years x 0.85 = 17 years) to 75% / 15 years for Battery 4B / 4D03 and Battery D52 / Spare (when used in place of Battery 4B). The intent of this surveillance requirement and selected value is to ensure that the battery is tested when it is in the period where its capacity is expected or known to start decreasing due to age and prior to reaching the 100% of the required design basis loading capacity. The proposed change maintains the present testing of at least three years prior to the battery's designed established end of service life (i.e., design basis load requirements). As such, Batteries 4B and D52 (Spare) would be tested 3.6 years prior to their designed end of service life of 18.6 years (75%/15 years) consistent with the intent of the existing TS SR. The degradation indication values would also be changed to maintain the TS SR intent of increased monitoring when the battery begins to show decreasing capacity. The battery capacity criteria for when it drops more than 10% of rated capacity from its average on previous performance tests will change to 7% and the below 90% of the manufacturer's rating will change to 93%. The TS SR values for the other safety related batteries (i.e., 3A / 3D03, 3B / 3D24 and 4A / 4D24) will remain unchanged. In addition, this request also decreases the surveillance interval of TS SR 4.8.2.1.e from 18 months to 12 months (all batteries) consistent with IEEE 450-1995, as suggested by the NRC staff. This increase in testing frequency only occurs when the battery shows degradation or approaches its service life and is considered appropriate to ensure that the battery retains its capability to perform its safety function. The IEEE standard considers potential negative impact to the battery (increased wear, duty cycling, etc.) due to the increased testing in establishing the testing frequency. In addition, any negative impact due to increased testing is considered minor and secondary to ensuring the safety function.

The proposed change to TS SR 4.8.2.1.f changes the battery capacity requirement from at least 80% to 87% of manufacturer's rating for Battery 4B / 4D03 and Battery D52 / Spare (when used in place of Battery 4B). This retains the intent of the present TS SR to ensure

that during the latter years of the expected battery life, there will be sufficient capacity to serve 100% of the design load. The TS SR values for the other safety related batteries (i.e., 3A / 3D03, 3B / 3D24 and 4A / 4D24) will remain unchanged.

Based on the above evaluation, the proposed changes to TS SR 4.8.2.1.e and f reflect the intent of the TS SR to ensure that sufficient battery capacity to serve 100% of the design basis load is available throughout the expected life of the battery, thus meeting all licensing requirements identified in the UFSAR and DBD.

Plant Procedures 0-SME-003.15 and 0-SME-003.4 are being revised to identify the more limiting criteria to ensure that any degrading battery capacity is identified well before Batteries 4B and D52 / Spare (when used in place of Battery 4B) reach their limiting design basis loading capacity.

Conclusion

Based on the above, the ability of the TS surveillance to ensure that the batteries have the capacity to perform their specified safety functions with regard to accident mitigation and meeting their licensing design basis requirements is not reduced / diminished.

4.0 No Significant Hazards Determination

Per 10 CFR 50.92, No Significant Hazard is involved if operation of the facility in accordance with the proposed amendment would not:

(a) Involve a significant increase in the probability or consequences of an accident previously evaluated; or
(b) Create the possibility of a new or different kind of accident from any accident previously evaluated; or
(c) Involve a significant reduction in a margin of safety

The proposed changes are to the Technical Specification (TS) Surveillance Requirement (SR) 4.8.2.1 associated with the 125-volt battery banks and are summarized as follows:

- Request to revise TS SR 4.8.2.1.b.2 and c.3 by providing lower micro-ohm values / limits for battery inter-cell & transition cable connections and a total battery connection resistance limit consistent with that used to calculate the acceptable voltage at equipment powered by the safety relayed batteries. This proposed change improves the ability of the TS surveillance to ensure that the batteries have the capacity to perform their specified safety functions with regard to accident mitigation and meeting their licensing design basis requirements.

- Request to revise the 18 and 60 month battery performance discharge test service life and capacity acceptance values for TS SR 4.8.2.1.e and f to values based on the battery calculation / battery design for Batteries 4B and D52 / Spare (when used in place of Battery 4B). In addition, this request also reduces the surveillance interval of TS SR 4.8.2.1.e, for batteries showing signs of degradation from 18 months to 12 months. The proposed changes provide more restrictive battery capacity and service life surveillance requirements and ensure that the batteries can perform their specified safety functions with regard to accident mitigation and meeting their licensing design basis requirements.

Evaluation of the proposed changes in accordance with the 10 CFR 50.92 criteria is provided below:

(a) Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed changes are to the surveillance requirements only. The ability of the TS surveillance to ensure that the batteries have the capacity to perform their specified safety functions with regard to accident mitigation or meeting their licensing design basis requirements is not reduced / diminished.

There are no design changes associated with this TS amendment. The DC power system / batteries will remain designed with adequate independency, redundancy, capacity and testability to permit the functioning required of the engineered safety features. The batteries will each continue to independently provide this capacity assuming a failure of a single active component.

The proposed changes will not affect accident initiators or precursors, not adversely alter the design assumptions, conditions, and configuration of the facility or the manner in which the plant is operated. The proposed changes will not alter or prevent the ability of structures, systems and components from performing their intended functions to mitigate the consequences of an initiating event.

The proposed changes do not physically alter safety related systems nor affect the way in which safety related systems perform their function.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

(b) Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed changes are to the surveillance requirements only. The ability of the TS surveillance to ensure that the batteries have the capacity to perform their specified safety functions with regard to accident mitigation or meeting their licensing design basis requirements is not reduced / diminished.

There are no proposed design changes nor are there any changes in the method by which any safety related plant structure, system, or component (SSC) performs its specified safety function. The proposed changes will not affect the normal method of plant operation or change any operating parameters. Equipment performance necessary to fulfill safety analysis missions will be unaffected. The proposed change will not alter any assumptions required to meet the safety analysis acceptance criteria.

No new accident scenarios, transient precursors, failure mechanisms, or limiting single failures will be introduced as a result of this amendment. There will be no adverse effect or challenges imposed on any safety related system as a result of this amendment.

Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

(c) Does the proposed change involve a significant reduction in a margin of safety?

Response: No

The proposed changes do not reduce the ability of the TS surveillance requirements to ensure that the station batteries have adequate capacity to perform their engineered safety features functions with regard to accident mitigation and meeting their licensing design basis requirements. The lower battery inter-cell connection resistance values are more restrictive, consistent with design basis calculations and appropriately identified in maintenance procedures. In addition, the battery connections quality is also inherently validated by the TS SR battery performance testing. The new values for the battery capacity and service life surveillance requirements are more restrictive and more appropriate acceptance criteria for verifying battery performance. The reduction in surveillance intervals for a battery showing signs of degradation from 18 months to 12 months is more conservative.

The proposed changes do not physically alter safety related systems. There will be no effect on those plant systems necessary to assure the accomplishment of protection functions. There will be no impact on the overpower limit, departure from nucleate boiling (DNBR) limits, loss of cooling accident peak cladding temperature (LOCA PCT), or any other margin of safety. The applicable radiological dose consequence acceptance criteria will continue to be met.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Conclusion:

Based on the above evaluation, it is concluded that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c).

5.0 Evironmental Considerations

The proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in an individual or accumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22 (c)(9). Therefore, pursuant to 10 CFR 51.22 (b), no environmental assessment will need to be prepared in connection with the proposed amendment.

6.0 List of Regulatory Commitments

None

Turkey Point Units 3 and 4

REVISED LICENSE AMENDMENT REQUEST NO. 210
PROPOSED CHANGES TO TURKEY POINT TECHNICAL SPECIFICATIONS
REGARDING D.C. SOURCES SURVEILLANCE REQUIREMENTS

ATTACHMENT 1

TECHNICAL SPECIFICATIONS MARKUPS

This coversheet plus 3 pages

Markup of Proposed Changes

The attached markup reflects the currently issued revision of the Technical Specifications listed below. Pending Technical Specifications or Technical Specification changes issued subsequent to this submittal are not reflected in the enclosed markup.

The following Technical Specifications are included in the attached markup:

Technical Specifications	Title	Page(s)
Specification 3 / 4.8.2	Electrical Power Systems	3 / 4.8-14,15

D.C. SOURCES

LIMITING CONDITION FOR OPERATION

ACTION: (Continued)

b. With one of the required battery banks inoperable, or with none of the full-capacity chargers associated with a battery bank OPERABLE, restore all battery banks to OPERABLE status and at least one charger associated with each battery bank to OPERABLE status within two hours* or be in at least HOT STANDBY within the next 12 hours and in COLD SHUTDOWN within the following 30 hours. This ACTION applies to both units simultaneously.

SURVEILLANCE REQUIREMENTS (Continued)

4.8.2.1 Each 125-volt battery bank and its associated full capacity charger(s) shall be demonstrated OPERABLE:

a. At least once per 7 days by verifying that:

1) The parameters in Table 4.8-2 meet the Category A limits, and

2) The total battery terminal voltage is greater than or equal to 129 volts on float charge and the battery charger(s) output voltage is ≥ 129 volts, and

3) If two battery chargers are connected to the battery bank, verify each battery charger is supplying a minimum of 10 amperes, or demonstrate that the battery charger supplying less than 10 amperes will accept and supply the D.C. bus load independent of its associated battery charger.

b. At least once per 92 days and within 7 days after a battery discharge with battery terminal voltage below 105 volts (108.6 volts for spare battery D-52), or battery overcharge with battery terminal voltage above 143 volts, by verifying that:

1) The parameters in Table 4.8-2 meet the Category B limits,

2) There is no visible corrosion at either terminals or connectors, or verify battery connection resistance is:~~or the connection resistance is less than 150 x 10^{-6} ohm, and~~

Battery 3B, 4A	Connection inter-cell / termination inter-cell (brace locations) transition cables or total battery connections	Limit (Micro-Ohms) ≤ 29 ≤ 30 ≤ 125 ≤ 1958
Battery 3A, 4B, D-52	Connection inter-cell / termination inter-cell (brace locations) transition cables or total battery connections	Limit (Micro-Ohms) ≤ 35 ≤ 40 ≤ 125 ≤ 2463

3) The average electrolyte temperature of every sixth cell is above 60°F.

c. At least once per 18 months by verifying that:

1) The cells, cell plates, and battery racks show no visual indication of physical damage or abnormal deterioration,

SURVEILLANCE REQUIREMENTS (Continued)

2) The cell-to-cell and terminal connections are clean, tight, and coated with anticorrosion material,

~~3) The resistance of each cell-to-cell and terminal connection is less than or equal to 150×10^{-6} ohm, and~~ DELETED

3) Battery Connection resistance is:

Battery 3B, 4A	Connection inter-cell / termination inter-cell (brace locations) transition cables or total battery connections	Limit (Micro-Ohms) ≤ 29 ≤ 30 ≤ 125 ≤ 1958
Battery 3A, 4B, D-52	Connection inter-cell / termination inter-cell (brace locations) transition cables or total battery connections	Limit (Micro-Ohms) ≤ 35 ≤ 40 ≤ 125 ≤ 2463

4) Each 400 amp battery charger (associated with Battery Banks 3A and 4B) will supply at least 400 amperes at ≥ 129 volts for at least 8 hours, and each 300 amp battery charger (associated with Battery Banks 3B and 4A) will supply at least 300 amperes at ≥ 129 volts for at least 8 hours.

d. At least once per 18 months, during shutdown**, by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for the design duty cycle when the battery is subjected to a battery service test.

e. At least once per 12 months, during shutdown**, by giving performance discharge tests of battery capacity to any battery that shows signs of degradation or has reached 85% **[75% for Batteries 4B and D52 (Spare) when used in place of Battery 4B]** of ~~the~~ service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% **[7% for Batteries 4B and D52 (Spare) when used in place of Battery 4B]** of rated capacity from its average on previous performance tests, or is below 90% **[93% for Batteries 4B and D52 (Spare) when used in place of Battery 4B]** of the manufacturer's rating.

f. At least once per 60 months, during shutdown**, by verifying that the battery capacity is at least 80% **[87% for Batteries 4B and D52 (Spare) when used in place of Battery 4B]** of the manufacturer's rating when subjected to a performance discharge test. Once per 60-month interval this performance discharge test may be performed in lieu of the battery service test required by Specification 4.8.2.1.d.

** Except that the spare battery bank D-52, and any other battery out of service when spare battery bank D-52 is in service may be tested with simulated loads during operation.

Turkey Point Units 3 and 4

REVISED LICENSE AMENDMENT REQUEST NO. 210
PROPOSED CHANGES TO TURKEY POINT TECHNICAL SPECIFICATIONS
REGARDING D.C. SOURCES SURVEILLANCE REQUIREMENTS

ATTACHMENT 2

Summary of Calculation PTN-BFJE-94-002, Revision 7, "Battery Size and Voltage Drop Calculations for Stationary Batteries 3A, 3B, 4A, 4B, and Spare (D-52)"

The following is a summary of the applicable results as taken from Calculation PTN-BFJE-94-002 Rev. 7. All Battery Sizing and Discharge computations for this calculation have been performed by the ETAP program.

1.1 Battery Sizing

1.1.1 Normal Battery with 60 Cells

Battery sizes were computed for each of the Safety-Related batteries with 60 cells.

Battery	Computed Uncorrected Positive Plates	Aging Factor	Computed Correction Factor	Total Required Positive Plates	Acceptance Criteria (Pos Plates)	
3A	7.458	1.25	1.438	10.724	12	
3B	4.436	1.25	1.438	6.378	8	
4A	4.872	1.25	1.438	7.005	8	
4B	8.703	1.19	1.369	11.913	12	*

Table 1.1.1

*Aging Factor of 1.19 corresponds to approximately 19.2 years of cell life.

1.1.2 Spare Battery with 60 Cells

Battery sizes were computed for the Safety-Related spare battery when feeding each of the Safety-Related 125V buses (each bus fed individually). See Attachments 15 through 18 for ETAP calculations.

Battery	Computed Uncorrected Positive Plates	Aging Factor	Computed Correction Factor	Total Required Positive Plates	Acceptance Criteria (Pos Plates)	
3A	8.388	1.25	1.450	12.162	13	
3B	5.177	1.25	1.450	7.505	13	
4A	6.582	1.25	1.450	9.542	13	
4B	9.563	1.15	1.334	12.756	13	**

Table 1.1.3

**Aging Factor of 1.15 corresponds to approximately 18.6 years of cell life.

1.2 Battery Discharge

1.2.1 Normal Battery with 60 Cells

Battery Discharge voltages for each Safety-Related battery with 60 cells are given below. The table includes the calculated minimum battery terminal voltage and the worst-case inverter terminal voltage. The time in which the voltage occurred is identified in minutes after event initiation.

Device	Voltage	Minute	Acceptance Criteria	Notes
Battery 3A	108.3	119	≥ 105V	Aging factor of 1.25
INV 3Y01	105.4	1	≥ 103V	Aging factor of 1.25
Battery 3B	109.2	1	≥ 105.6V	Aging factor of 1.25
INV 4Y05	105.7	1	≥ 103V	Aging factor of 1.25
Battery 4A	107.0	1	≥ 105V	Aging factor of 1.25
INV 3Y07	104.2	1	≥ 103V	Aging factor of 1.25
Battery 4B	105.3	119	≥ 105V	Aging factor of 1.19
INV 4Y02	103.3	119	≥ 103V	Aging factor of 1.19

Table 1.2.1

1.2.2 Spare Battery with 60 Cells

Battery Discharge voltages for the Spare Battery connected to each of the Safety-Related buses with 60 cells are given below. The table includes the calculated minimum battery terminal voltage and the worst-case inverter terminal voltage. The time at which the voltage occurred is identified in minutes after event initiation.

Device	Voltage	Minute	Acceptance Criteria	Notes
Spare for Batt 3A	108.9	1	≥ 108.6V	Aging factor of 1.25
INV 3Y01	104.4	1	≥ 103V	Aging factor of 1.25
Spare for Batt 3B	113.3	1	≥ 108.6V	Aging factor of 1.25
INV 4Y05	109.2	1	≥ 103V	Aging factor of 1.25
Spare for Batt 4A	111.2	1	≥ 108.6V	Aging factor of 1.25
INV 3Y07	107.1	1	≥ 103V	Aging factor of 1.25
Spare for Batt 4B	108.7	119	≥ 108.6V	Aging factor of 1.15
INV 4Y02	105.7	1	≥ 103V	Aging factor of 1.15

Table 1.2.3

Note: For cases where the worst case voltage occurs in the first minute, the voltage increases after the first minute load block and remains above the first minute voltage at 120 minutes (2 hours).

1.3 Results

1.3.1 Battery Sizing with 60 Cells for Normal Battery

The battery sizing analysis performed by ETAP shows all the safety batteries with 60 cells are adequately sized to supply power to the postulated load duty cycle. The results show the calculated positive plates required are less than the actual number of battery positive plates, and that battery and inverter terminal voltages do not fall below the required voltages throughout the entire duty cycle. Batteries 3A, 3B, and 4A have a maximum cell life of 20 years (1.25 aging factor); Battery 4B has a maximum cell life of 19.2 years (1.19 aging factor) under this alignment.

1.3.2 Battery Sizing with 60 Cells for Spare Battery

The battery sizing analysis performed by ETAP shows the spare safety battery with 60 cells is adequately sized to supply power to the postulated load duty cycle when aligned to each safety bus. The results show the calculated positive plates required are less than the actual number of battery positive plates, and that battery and inverter terminal voltage do not fall below the required voltages throughout the entire duty cycle. The Spare Battery is limited to a maximum cell life of 18.6 years (1.15 aging factor) when replacing Battery 4B and 20 years (1.25 aging factor) when replacing Battery 3A, Battery 3B or Battery 4A.

1.3.3 Battery Discharge with 60 Cells for Normal Battery

The battery discharge analysis performed by ETAP shows the terminal voltage for each Safety-Related battery is above the required voltages for its entire duty cycle. Terminal voltages for the inverters are above the required 103V. The aging factors listed in Section 1.2.1 were used for this analysis.

1.3.4 Battery Discharge with 60 Cells for Spare Battery

The battery discharge analysis performed by ETAP shows that the terminal voltage for the spare battery is above the required voltage for the entire duty cycle when replacing each normal battery. Inverter terminal voltages are above the required 103V when fed from the spare battery. The aging factors listed in Section 1.2.2 were used for this analysis.

1.3.5 Battery Charger Sizing

Based on the Unit Trip/LOOP discharge profile, the Safety-Related battery chargers are adequately sized to supply power to the connected loads and recharge the batteries within 24 hours.