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OCT 23 1991

L-91-256
10 CFR 50.54(f)

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

Gentlemen:

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Generic Letter No. 91-06, Resolution of Generic Issue A-30, "Adequacy of Safety-Related DC Power Supplies"

Generic Letter 91-06, issued on April 29, 1991, requested licensees to respond to questions pertaining to plant specific maintenance, surveillance, and monitoring provisions of the safety-related DC power supply system. Florida Power and Light Company's response for Turkey Point Units 3 and 4 is provided as attached.

In accordance with 10 CFR 50.54 (f), the enclosed response is submitted under oath and affirmation.

Should there be any questions, please contact us.

Very truly yours,

W. H. Bohlke
Vice President
Nuclear Engineering and Licensing

WHB/RJT/rjt
Attachment

cc: Stewart D. Ebneter, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

A001

STATE OF FLORIDA)
) ss.
COUNTY OF DADE)

W. H. Bohlke being first duly sworn, deposes and says:

That he is Vice President, Nuclear Engineering and Licensing, 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.

W. H. Bohlke

Subscribed and sworn to before me this 23 day of October, 1991.

Karen L Charleston

NOTARY PUBLIC, in and for the County of Dade, State of Florida

My Commission expires

Notary Public, State of Florida
My Commission Expires Jan. 16, 1993
Bonded Thru Troy Fain - Insurance Inc.

Attachment 1

Turkey Point Unit 3
Response to Generic Letter 91-06

ATTACHMENT 1

10 CFR 50.54 (f) REQUEST - GENERIC ISSUE (GI) A-30 "ADEQUACY OF SAFETY-RELATED DC POWER SUPPLIES"

Turkey Point Unit 3 Response:

The following information is to be provided for each unit at each site:

1. **Turkey Point Unit** 3

2. a. **The number of independent redundant divisions of Class 1E or safety related dc power for this plant is** four (shared between Units 3 and 4). **(Include any separate Class 1E or safety-related dc, such as any dc dedicated to the diesel generators.)**

   The dc system at Turkey Point consists of independent busses, batteries and battery chargers which share loads between the two units. The safety related dc system consists of four independent batteries, two dedicated battery chargers per bus, the associated dc busses (3A, 3B, 4A and 4B), and an installed spare battery which can be utilized to replace any one of the four batteries.

   The four dc busses primarily power loads associated with their unit and train, but also power shared equipment such as auxiliary feedwater system.

   Accordingly, Turkey Point's Technical Specifications requires that four batteries be operable with either unit in modes 1 through 4.

   b. **The number of functional safety-related divisions of dc power necessary to attain safe shutdown for this unit is** three out of four (under normal operating conditions).

   However, in accordance with the Appendix R definition of "safe shutdown", Turkey Point is required to have only one operable bus (B train) per unit.

3. **Does the control room at this unit have the following separate, independently annunciated alarms and indications for each division of dc power?**

   a. **alarms**

      1. **Battery disconnect or circuit breaker open?** Yes

         Each dc bus has an independent annunciator in the control room labelled as "DC Load Center Trouble". An annunciation of the DC Load Center Trouble alarm signals either battery circuit breaker open or dc bus undervoltage.

      2. **Battery charger disconnect or circuit breaker open (both input ac and output dc)?** Yes

         Each dc battery charger has separate annunciation in the control room via a reflash unit, and a control board window labelled "Vital DC Battery Charger Failure". This annunciator will actuate in response to abnormal conditions, including loss of ac supply, ac input breaker open, dc output breaker open, dc undervoltage, dc overvoltage and battery charger failure.

      3. **DC system ground?** Yes

      4. **DC bus undervoltage?** Yes

         Each dc bus has an independent annunciator in the control room labelled as "DC Load Center Trouble". An annunciation of the DC Load Center Trouble alarm signals either dc bus undervoltage or battery circuit breaker open.

      5. **DC bus overvoltage?** Yes

         DC bus overvoltage is monitored at each battery charger. Each dc battery charger has separate annunciation in the control room via a reflash unit, and a control board window labelled "Vital DC Battery Charger Failure". This annunciator will actuate in response to abnormal conditions, including loss of ac supply, ac input breaker open, dc output breaker open, dc undervoltage, dc overvoltage and battery charger failure.

6. **Battery charger failure?** Yes

Each dc battery charger has separate annunciation in the control room via a reflash unit, and a control board window labelled "Vital DC Battery Charger Failure". This annunciator will actuate in response to abnormal conditions, including loss of ac supply, ac input breaker open, dc output breaker open, dc undervoltage, dc overvoltage and battery charger failure.

7. **Battery discharge?** No

Battery discharge is assumed to describe an integrated current over time indication which would yield a percentage of the batteries full charge. Local indication of battery discharge current is provided by an ammeter for each bus. This ammeter indicates the flow of current to or from the associated battery and normally reads near zero, indicating only float charging current.

b. **Indications**

1. **Battery float charge current?** No

Local indication of battery float charge current is provided by an ammeter for each dc bus. This ammeter indicates the flow of current to or from the associated battery and normally reads near zero, indicating only float charging current.

2. **Battery circuit output current?** No

Local indication of battery circuit output current is provided by an ammeter for each dc bus. This ammeter indicates the flow of current to or from the associated battery and normally reads near zero, indicating only float charging current.

3. **Battery discharge?** No

Battery discharge is assumed to describe an integrated current over time indication which would yield a percentage of the batteries full charge. Local indication of battery discharge current is provided by an ammeter for each dc bus. This ammeter indicates the flow of current to or from the associated battery and normally reads near zero, indicating only float charging current.

4. **Bus Voltage?** No

Bus voltage is not a normal control board indication, but is available in the control room via the ERDADS plant computer. Local indication of bus voltage is also available for each dc bus.

c. **Does the unit have written procedures for response to the above alarms and indications?** Yes

4. **Does this unit have indication of bypassed and inoperable status of circuit breakers or other devices that can be used to disconnect the battery and battery charger from its dc bus and the battery charger from its ac power source during maintenance or testing?** No

The only "disconnecting device" which is not alarmed is the battery charger output breaker at the dc bus. (Note: There is a main battery fuse bolted in place between the battery and the bus. This fuse is not used as a "disconnecting device" during maintenance or testing.)

5. **If the answer to any part of question 3 or 4 is no, then provide information justifying the existing design features of the facility's safety-related dc systems. (*See note below.)**

Local Indication

At Turkey Point, the batteries and dc busses are readily accessible from the control room. Batteries 3B and 4A along with the respective dc busses are located in the dc equipment and inverter room accessible directly behind the control room. Batteries 3A and 4B are accessible via the cable spreading room located directly below the control room. The spare battery is located in the new equipment room adjacent to the cable spreading room. Since the dc local instrumentation is physically located near the control room, the information required is readily available.

Question 3.a.7 Battery discharge Alarm

Local indication of battery discharge current is provided by an ammeter for each bus. This ammeter indicates the current to or from the associated battery and normally reads near zero indicating only float charging current. The lack of

indication and associated alarm for battery discharge is not a concern as the battery would only discharge if the two battery chargers on the dc bus both failed. Failure of both battery chargers is an unlikely event and would be annunciated for each charger. Failure of both battery chargers would eventually result in a bus undervoltage alarm.

The requirement of local indication only is consistent with the recommendations of IEEE Standard 946-1985. In addition, battery sizing calculations, dc load profiles and battery capacity tests confirm that the battery will meet the designed service requirements.

Question 3.b.1 Battery float charge current Indication

Local indication of battery float charge current is provided by an ammeter for each bus. This ammeter indicates the flow of current to or from the associated battery and normally reads near zero, indicating only float charging current. The requirement of local indication only is consistent with the recommendations of IEEE Standard 946-1985.

Operators perform surveillances on a daily basis to verify each battery charger output voltage and output current is above the minimum requirement. This verification confirms that each battery charger is functioning correctly and maintaining a float voltage. Since the float voltage of the battery charger is applied to the battery, the float current will be as required to maintain the battery fully charged. This results in a small float current, for which a numerical value is not critical. In order to disrupt the float current the only credible cause is either a battery charger failing or an open "disconnecting device". Both situations would result in either a "Vital DC Battery Charger Failure" alarm, "DC Load Center Trouble" alarm or loss of charger output current which would be observed during the daily surveillance.

The "State of Charge" is monitored on a weekly basis by verifying the specific gravity of the pilot cell.

During the quarterly maintenance surveillance, a portable dc ammeter is used to measure the float current.

Question 3.b.2 Battery circuit output current Indication

Local indication of battery circuit output current is provided by an ammeter for each bus. This ammeter indicates

the flow of current to or from the associated battery and normally reads near zero, indicating only float charging current.

Normally the battery chargers carry the entire bus load and maintain the batteries on float. The battery would only discharge, provided there was failure of both battery chargers on a bus. Failure of both battery chargers is an unlikely event and would be annunciated for each charger. Battery sizing calculations, dc load profiles and battery capacity tests confirm that the battery will meet the designed service requirements in circumstances requiring battery output.

The requirement of local indication only is consistent with the recommendations of IEEE Standard 946-1985.

Question 3.b.3 Battery discharge Indication

Local indication of battery discharge current is provided by an ammeter for each bus. This ammeter indicates the current to or from the associated battery and normally reads near zero indicating only float charging current. The lack of indication and associated alarm for battery discharge is not a concern as the battery would only discharge if the two battery chargers on the dc bus both failed. Failure of both battery chargers is an unlikely event and would be annunciated for each charger. Failure of both battery chargers would eventually result in a bus undervoltage alarm.

The requirement of local indication only is consistent with the recommendations of IEEE Standard 946-1985. In addition, battery sizing calculations, dc load profiles and battery capacity tests confirm that the battery will meet the designed service requirements.

Question 3.b.4 Bus voltage Indication

Bus voltage is not a normal control board indication, but is available in the control room via the ERDADS plant computer. Local indication of bus voltage is available for each dc bus.

DC bus undervoltage or overvoltage alarms are provided via the "DC Load Center Trouble" or the "Vital DC Battery Charger Failure" alarm. Either annunciation will signal the control room operator to monitor the ERDADS plant computer to obtain the specific bus voltage.

Question 4

The battery disconnect breaker, the dc output breaker at the battery charger and the ac input breaker at the battery charger are alarmed. Upon sensing the battery breaker (normal and spare) to the bus opening, the annunciator alarm "DC Load Center Trouble" will actuate in the control room. If either the dc output breaker or the ac input breaker at the battery charger is open the "Vital DC Battery Charger Failure" annunciator will alarm in the control room.

With respect to the battery chargers, Turkey Point has parallel 100% battery chargers. The 480V Motor Control Center breakers to the battery chargers are not alarmed. However, in the event the breaker is open, the battery charger will see loss of ac and annunciate the "Vital DC Battery Charger Failure" alarm in the control room.

The only "disconnecting device" which is not alarmed is the battery charger output breaker at the dc bus. Since Turkey Point has parallel 100% battery chargers, both dc bus breakers would have to be open before the bus would rely on the battery alone. In this unlikely event, the bus voltage would drift down and the dc bus undervoltage alarm would annunciate. In addition, operators perform surveillances on a daily basis to verify each battery charger output voltage and output current is above the minimum requirement. This verification confirms that (a) battery charger is operating correctly, (b) the battery charger output breaker at the dc bus is closed and (c) the dc output breaker at the battery charger is closed.

6. **(1) Have you conducted a review of maintenance and testing activities to minimize the potential for human error causing more than one dc division to be unavailable? Yes and (2) do plant procedures prohibit maintenance or testing on redundant dc divisions at the same time? Yes**

If the facility Technical Specifications have provisions equivalent to those found in the Westinghouse and Combustion Engineering Standard Technical Specification for maintenance and surveillance, then question 7 may be skipped and a statement to that effect may be inserted here.

7. Are maintenance, surveillance and test procedures regarding station batteries conducted routinely at this plant? Specifically:

   a. At least once per 7 days are the following verified to be within acceptable limits:

      1. Pilot cell electrolyte level? Yes

      2. Specific gravity or charging current? Yes

      3. Float voltage? Yes

      4. Total bus voltage on float charge? Yes

      5. Physical condition of all cells? No

         The electrolyte level of each cell is checked on a weekly basis indicating the physical condition of each cell.

   b. At least once per 92 days, or within 7 days after a battery discharge, overcharge, or if the pilot cell readings are outside the 7-day surveillance requirements are the following verified to be within acceptable limits:

      1. Electrolyte level of each cell? Yes

      2. The average specific gravity of all cells? Yes

      3. The specific gravity of each cell? Yes

      4. The average electrolyte temperature of a representative number of cells? Yes

      5. The float voltage of each cell? Yes

      6. Visually inspect or measure resistance of terminals and connectors (including the connectors at the dc bus)? Yes

c. At least every 18 months are the following verified:

1. Low resistance of each connection (by test)? Yes

2. Physical condition of the battery? Yes

3. Battery charger capability to deliver rated ampere output to the dc bus? Yes

4. The capability of the battery to deliver its design duty cycle to the dc bus? Yes

5. Each individual cell voltage is within acceptable limits during the service test? No

During the service test, the individual cell voltage is monitored, however the acceptance criteria is based on the overall battery voltage. The service test verifies that the overall battery will meet the designed duty cycle.

d. At least every 60 months, is capacity of each battery verified by performance of a discharge test? Yes

e. At least annually, is the battery capacity verified by performance discharge test, if the battery shows signs of degradation or has reached 85% of the expected service life? No

In accordance with Turkey Point's Technical Specifications, this performance discharge test is performed every eighteen months. This periodic interval was chosen to allow testing to be performed during the plant's refueling outage.

8. Does the plant have operational features such that following loss of one safety-related dc power supply or bus:

a. Capability is maintained for ensuring continued and adequate reactor cooling? Yes

b. Reactor coolant system integrity and isolation capability are maintained. Yes

c. Operating procedures, instrumentation (including indicators and annunciators), and control functions are adequate to initiate systems as required to maintain adequate core cooling? Yes

9. **If the answer to any part of question 6, 7 or 8 is no, then provide your basis for not performing the maintenance, surveillance and test procedures described and/or the bases for not including the operational features cited. (*See note below.)**

Question 7.a.5. Physical condition of all cells

On a weekly basis, the electrolyte level of each cell is inspected. During this inspection, any gross damage to each battery would be observed, as well as any appreciable loss of battery fluid.

Question 7.c.5. Each individual cell voltage is within acceptable limits during the service test

Every eighteen months, the service test is performed on each battery. During this test the individual cell voltage is monitored. The acceptance criteria for this test is based on the overall battery voltage, since this test verifies the ability of the overall battery to meet the designed duty cycle.

Question 7.e At least annually, is the battery capacity verified by performing discharge test, if the battery shows signs of degradation or has reached 85% of the expected service life

Turkey Point Technical Specifications require this test to be performed every eighteen months, as opposed to annually. This periodic interval was chosen to allow testing to be performed during a planned refueling outage.

*Note: **For questions involving supporting type information (question numbers 5 and 9) instead of developing and supplying the information in response to this letter, you may commit to further evaluate the need for such provisions during the performance of your individual plant examination for severe accident vulnerabilities (IPE). If you select this option, you are required to:**

(1) So state in response to these questions, and
(2) Commit to explicitly address questions 5 and 9 in your IPE submittal per the guidelines outlined in NUREG-1335 (Section 2.1.6, Subitem 7), "Individual Plant Examination: Submittal Guidance."

Attachment 2

Turkey Point Unit 4
Response to Generic Letter 91-06

ATTACHMENT 2

10 CFR 50.54 (f) REQUEST - GENERIC ISSUE (GI) A-30 "ADEQUACY OF SAFETY-RELATED DC POWER SUPPLIES"

Turkey Point Unit 4 Response:

The following information is to be provided for each unit at each site:

1. **Turkey Point Unit** 4

2. a. **The number of independent redundant divisions of Class 1E or safety related dc power for this plant is** four (shared between Units 3 and 4). **(Include any separate Class 1E or safety-related dc, such as any dc dedicated to the diesel generators.)**

   The dc system at Turkey Point consists of independent busses, batteries and battery chargers which share loads between the two units. The safety related dc system consists of four independent batteries, two dedicated battery chargers per bus, the associated dc busses (3A, 3B, 4A and 4B), and an installed spare battery which can be utilized to replace any one of the four batteries.

   The four dc busses primarily power loads associated with their unit and train, but also power shared equipment such as auxiliary feedwater system.

   Accordingly, Turkey Point's Technical Specifications requires that four batteries be operable with either unit in modes 1 through 4.

   b. **The number of functional safety-related divisions of dc power necessary to attain safe shutdown for this unit is** three out of four (under normal operating conditions).

   However, in accordance with the Appendix R definition of "safe shutdown", Turkey Point is required to have only one operable bus (B train) per unit.

3. **Does the control room at this unit have the following separate, independently annunciated alarms and indications for each division of dc power?**

   a. **alarms**

      1. **Battery disconnect or circuit breaker open?** Yes

         Each dc bus has an independent annunciator in the control room labelled as "DC Load Center Trouble". An annunciation of the DC Load Center Trouble alarm signals either battery circuit breaker open or dc bus undervoltage.

      2. **Battery charger disconnect or circuit breaker open (both input ac and output dc)?** Yes

         Each dc battery charger has separate annunciation in the control room via a reflash unit, and a control board window labelled "Vital DC Battery Charger Failure". This annunciator will actuate in response to abnormal conditions, including loss of ac supply, ac input breaker open, dc output breaker open, dc undervoltage, dc overvoltage and battery charger failure.

      3. **DC system ground?** Yes

      4. **DC bus undervoltage?** Yes

         Each dc bus has an independent annunciator in the control room labelled as "DC Load Center Trouble". An annunciation of the DC Load Center Trouble alarm signals either dc bus undervoltage or battery circuit breaker open.

      5. **DC bus overvoltage?** Yes

         DC bus overvoltage is monitored at each battery charger. Each dc battery charger has separate annunciation in the control room via a reflash unit, and a control board window labelled "Vital DC Battery Charger Failure". This annunciator will actuate in response to abnormal conditions, including loss of ac supply, ac input breaker open, dc output breaker open, dc undervoltage, dc overvoltage and battery charger failure.

6. **Battery charger failure?** Yes

Each dc battery charger has separate annunciation in the control room via a reflash unit, and a control board window labelled "Vital DC Battery Charger Failure". This annunciator will actuate in response to abnormal conditions, including loss of ac supply, ac input breaker open, dc output breaker open, dc undervoltage, dc overvoltage and battery charger failure.

7. **Battery discharge?** No

Battery discharge is assumed to describe an integrated current over time indication which would yield a percentage of the batteries full charge. Local indication of battery discharge current is provided by an ammeter for each bus. This ammeter indicates the flow of current to or from the associated battery and normally reads near zero, indicating only float charging current.

b. **Indications**

1. **Battery float charge current?** No

Local indication of battery float charge current is provided by an ammeter for each dc bus. This ammeter indicates the flow of current to or from the associated battery and normally reads near zero, indicating only float charging current.

2. **Battery circuit output current?** No

Local indication of battery circuit output current is provided by an ammeter for each dc bus. This ammeter indicates the flow of current to or from the associated battery and normally reads near zero, indicating only float charging current.

3. **Battery discharge?** No

Battery discharge is assumed to describe an integrated current over time indication which would yield a percentage of the batteries full charge. Local indication of battery discharge current is provided by an ammeter for each dc bus. This ammeter indicates the flow of current to or from the associated battery and normally reads near zero, indicating only float charging current.

4. **Bus Voltage?** No

Bus voltage is not a normal control board indication, but is available in the control room via the ERDADS plant computer. Local indication of bus voltage is also available for each dc bus.

c. **Does the unit have written procedures for response to the above alarms and indications?** Yes

4. **Does this unit have indication of bypassed and inoperable status of circuit breakers or other devices that can be used to disconnect the battery and battery charger from its dc bus and the battery charger from its ac power source during maintenance or testing?** No

The only "disconnecting device" which is not alarmed is the battery charger output breaker at the dc bus. (Note: There is a main battery fuse bolted in place between the battery and the bus. This fuse is not used as a "disconnecting device" during maintenance or testing.)

5. **If the answer to any part of question 3 or 4 is no, then provide information justifying the existing design features of the facility's safety-related dc systems. (*See note below.)**

Local Indication

At Turkey Point, the batteries and dc busses are readily accessible from the control room. Batteries 3B and 4A along with the respective dc busses are located in the dc equipment and inverter room accessible directly behind the control room. Batteries 3A and 4B are accessible via the cable spreading room located directly below the control room. The spare battery is located in the new equipment room adjacent to the cable spreading room. Since the dc local instrumentation is physically located near the control room, the information required is readily available.

Question 3.a.7 Battery discharge Alarm

Local indication of battery discharge current is provided by an ammeter for each bus. This ammeter indicates the current to or from the associated battery and normally reads near zero indicating only float charging current. The lack of

indication and associated alarm for battery discharge is not a concern as the battery would only discharge if the two battery chargers on the dc bus both failed. Failure of both battery chargers is an unlikely event and would be annunciated for each charger. Failure of both battery chargers would eventually result in a bus undervoltage alarm.

The requirement of local indication only is consistent with the recommendations of IEEE Standard 946-1985. In addition, battery sizing calculations, dc load profiles and battery capacity tests confirm that the battery will meet the designed service requirements.

Question 3.b.1 Battery float charge current Indication

Local indication of battery float charge current is provided by an ammeter for each bus. This ammeter indicates the flow of current to or from the associated battery and normally reads near zero, indicating only float charging current. The requirement of local indication only is consistent with the recommendations of IEEE Standard 946-1985.

Operators perform surveillances on a daily basis to verify each battery charger output voltage and output current is above the minimum requirement. This verification confirms that each battery charger is functioning correctly and maintaining a float voltage. Since the float voltage of the battery charger is applied to the battery, the float current will be as required to maintain the battery fully charged. This results in a small float current, for which a numerical value is not critical. In order to disrupt the float current the only credible cause is either a battery charger failing or an open "disconnecting device". Both situations would result in either a "Vital DC Battery Charger Failure" alarm, "DC Load Center Trouble" alarm or loss of charger output current which would be observed during the daily surveillance.

The "State of Charge" is monitored on a weekly basis by verifying the specific gravity of the pilot cell.

During the quarterly maintenance surveillance, a portable dc ammeter is used to measure the float current.

Question 3.b.2 Battery circuit output current Indication

Local indication of battery circuit output current is provided by an ammeter for each bus. This ammeter indicates the flow of current to or from the associated battery and normally reads near zero, indicating only float charging current.

Normally the battery chargers carry the entire bus load and maintain the batteries on float. The battery would only discharge, provided there was failure of both battery chargers on a bus. Failure of both battery chargers is an unlikely event and would be annunciated for each charger. Battery sizing calculations, dc load profiles and battery capacity tests confirm that the battery will meet the designed service requirements in circumstances requiring battery output.

The requirement of local indication only is consistent with the recommendations of IEEE Standard 946-1985.

Question 3.b.3 Battery discharge Indication

Local indication of battery discharge current is provided by an ammeter for each bus. This ammeter indicates the current to or from the associated battery and normally reads near zero indicating only float charging current. The lack of indication and associated alarm for battery discharge is not a concern as the battery would only discharge if the two battery chargers on the dc bus both failed. Failure of both battery chargers is an unlikely event and would be annunciated for each charger. Failure of both battery chargers would eventually result in a bus undervoltage alarm.

The requirement of local indication only is consistent with the recommendations of IEEE Standard 946-1985. In addition, battery sizing calculations, dc load profiles and battery capacity tests confirm that the battery will meet the designed service requirements.

Question 3.b.4 Bus voltage Indication

Bus voltage is not a normal control board indication, but is available in the control room via the ERDADS plant computer. Local indication of bus voltage is available for each dc bus.

DC bus undervoltage or overvoltage alarms are provided via the "DC Load Center Trouble" or the "Vital DC Battery Charger Failure" alarm. Either annunciation will signal the control room operator to monitor the ERDADS plant computer to obtain the specific bus voltage.

Question 4

The battery disconnect breaker, the dc output breaker at the battery charger and the ac input breaker at the battery charger are alarmed. Upon sensing the battery breaker (normal and spare) to the bus opening, the annunciator alarm "DC Load Center Trouble" will actuate in the control room. If either the dc output breaker or the ac input breaker at the battery charger is open the "Vital DC Battery Charger Failure" annunciator will alarm in the control room.

With respect to the battery chargers, Turkey Point has parallel 100% battery chargers. The 480V Motor Control Center breakers to the battery chargers are not alarmed. However, in the event the breaker is open, the battery charger will see loss of ac and annunciate the "Vital DC Battery Charger Failure" alarm in the control room.

The only "disconnecting device" which is not alarmed is the battery charger output breaker at the dc bus. Since Turkey Point has parallel 100% battery chargers, both dc bus breakers would have to be open before the bus would rely on the battery alone. In this unlikely event, the bus voltage would drift down and the dc bus undervoltage alarm would annunciate. In addition, operators perform surveillances on a daily basis to verify each battery charger output voltage and output current is above the minimum requirement. This verification confirms that (a) battery charger is operating correctly, (b) the battery charger output breaker at the dc bus is closed and (c) the dc output breaker at the battery charger is closed.

6. **(1) Have you conducted a review of maintenance and testing activities to minimize the potential for human error causing more than one dc division to be unavailable? Yes and (2) do plant procedures prohibit maintenance or testing on redundant dc divisions at the same time? Yes**

If the facility Technical Specifications have provisions equivalent to those found in the Westinghouse and Combustion Engineering Standard Technical Specification for maintenance and surveillance, then question 7 may be skipped and a statement to that effect may be inserted here.

7. Are maintenance, surveillance and test procedures regarding station batteries conducted routinely at this plant? Specifically:

   a. At least once per 7 days are the following verified to be within acceptable limits:

      1. Pilot cell electrolyte level? Yes

      2. Specific gravity or charging current? Yes

      3. Float voltage? Yes

      4. Total bus voltage on float charge? Yes

      5. Physical condition of all cells? No

         The electrolyte level of each cell is checked on a weekly basis indicating the physical condition of each cell.

   b. At least once per 92 days, or within 7 days after a battery discharge, overcharge, or if the pilot cell readings are outside the 7-day surveillance requirements are the following verified to be within acceptable limits:

      1. Electrolyte level of each cell? Yes

      2. The average specific gravity of all cells? Yes

      3. The specific gravity of each cell? Yes

      4. The average electrolyte temperature of a representative number of cells? Yes

      5. The float voltage of each cell? Yes

      6. Visually inspect or measure resistance of terminals and connectors (including the connectors at the dc bus)? Yes

c. At least every 18 months are the following verified:

1. Low resistance of each connection (by test)? Yes

2. Physical condition of the battery? Yes

3. Battery charger capability to deliver rated ampere output to the dc bus? Yes

4. The capability of the battery to deliver its design duty cycle to the dc bus? Yes

5. Each individual cell voltage is within acceptable limits during the service test? No

During the service test, the individual cell voltage is monitored, however the acceptance criteria is based on the overall battery voltage. The service test verifies that the overall battery will meet the designed duty cycle.

d. At least every 60 months, is capacity of each battery verified by performance of a discharge test? Yes

e. At least annually, is the battery capacity verified by performance discharge test, if the battery shows signs of degradation or has reached 85% of the expected service life? No

In accordance with Turkey Point's Technical Specifications, this performance discharge test is performed every eighteen months. This periodic interval was chosen to allow testing to be performed during the plant's refueling outage.

8. Does the plant have operational features such that following loss of one safety-related dc power supply or bus:

a. Capability is maintained for ensuring continued and adequate reactor cooling? Yes

b. Reactor coolant system integrity and isolation capability are maintained. Yes

c. Operating procedures, instrumentation (including indicators and annunciators), and control functions are adequate to initiate systems as required to maintain adequate core cooling? Yes

9. **If the answer to any part of question 6, 7 or 8 is no, then provide your basis for not performing the maintenance, surveillance and test procedures described and/or the bases for not including the operational features cited. (*See note below.)**

Question 7.a.5. Physical condition of all cells

On a weekly basis, the electrolyte level of each cell is inspected. During this inspection, any gross damage to each battery would be observed, as well as any appreciable loss of battery fluid.

Question 7.c.5. Each individual cell voltage is within acceptable limits during the service test

Every eighteen months, the service test is performed on each battery. During this test the individual cell voltage is monitored. The acceptance criteria for this test is based on the overall battery voltage, since this test verifies the ability of the overall battery to meet the designed duty cycle.

Question 7.e At least annually, is the battery capacity verified by performing discharge test, if the battery shows signs of degradation or has reached 85% of the expected service life

Turkey Point Technical Specifications require this test to be performed every eighteen months, as opposed to annually. This periodic interval was chosen to allow testing to be performed during a planned refueling outage.

*Note: For questions involving supporting type information (question numbers 5 and 9) instead of developing and supplying the information in response to this letter, you may commit to further evaluate the need for such provisions during the performance of your individual plant examination for severe accident vulnerabilities (IPE). If you select this option, you are required to:

(1) So state in response to these questions, and
(2) Commit to explicitly address questions 5 and 9 in your IPE submittal per the guidelines outlined in NUREG-1335 (Section 2.1.6, Subitem 7), "Individual Plant Examination: Submittal Guidance."