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Paul D. Hinnenkamp
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RBG-46375

December 17, 2004

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

SUBJECT: License Amendment Request
Amendment to Technical Specification 3.8.4 Actions for Inoperable Division 1 or 2 Battery Charger
River Bend Station, Unit 1
Docket No. 50-458
License No. NPF-47

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Entergy Operations, Inc. (Entergy) hereby requests the following amendment for River Bend Station, Unit 1 (RBS). The proposed change will revise the Operating License by modifying the Technical Specification (TS) requirements for direct current (DC) sources through revision of Specification 3.8.4, "DC Sources – Operating".

The current RBS TS only include Action Statements for the inoperable DC Power subsystem. The proposed change incorporates a new Action Statement to specifically address an inoperable battery charger. The proposed changes are related to the TS Actions for Division 1 and 2 battery chargers and DC electrical power subsystems.

The proposed change has been evaluated in accordance with 10 CFR 50.91(a)(1) using criteria in 10 CFR 50.92(c) and it has been determined that this change involves no significant hazards consideration. The bases for these determinations are included in attachment 1 of this submittal.

The proposed change includes new commitments as summarized in Attachment 4.

Entergy requests approval of the proposed amendment as soon as possible. It should be noted that, prior to this submittal, RBS had recently observed voltage fluctuations in the charger output. A battery charger was declared inoperable and the appropriate TS action statements were entered. While the concerns have been addressed by corrective maintenance activities, RBS had noted in telephone calls with the NRC our plan to submit a proposed TS change. This submittal will provide a component level allowed outage time for the battery charger; this will afford some additional flexibility should the charger require additional maintenance. Once approved, the amendment shall be implemented within at least 30 days. Although this request is neither exigent nor emergency at this time, your prompt review is requested. It was also discussed with the NRC that, should the need arise, RBS

A001

may revise its requested schedule for the review of this TS change to an exigent or emergency situation.

If you have any questions or require additional information, please contact Greg Norris at 225-336-6391.

I declare under penalty of perjury that the foregoing is true and correct. Executed on December 17, 2004.

Sincerely,

Paul D. Hinnenkamp
Vice President, Operations
River Bend Station, Unit 1

PDH/GPN

Attachments:
1. Analysis of Proposed Technical Specification Change
2. Proposed Technical Specification Changes (mark-up)
3. Changes to Technical Specification Bases Pages – For Information Only
4. List of Regulatory Commitments

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Attachment 1

RBG-46375

Analysis of Proposed Technical Specification Change

1.0 DESCRIPTION

This letter is a request to amend Operating License NPF-47 for River Bend Station, Unit 1 (RBS).

The proposed change will revise the Operating License by modifying the Technical Specification (TS) requirements for direct current (DC) sources through revision of Specification 3.8.4, "DC Sources – Operating".

The proposed changes are related to the TS Actions for Division 1 and 2 battery chargers and DC electrical power subsystems. New, less restrictive Actions are proposed for inoperable battery chargers.

2.0 PROPOSED CHANGE

The current River Bend Technical Specifications limit restoration time for an inoperable battery charger to the same time limit as required for an inoperable battery or a completely de-energized DC distribution subsystem. The primary function of the battery charger is to support the OPERABILITY requirements of its associated battery.

The current 2 hour restoration time is based on Regulatory Guide 1.93, and has been applied equally to both a minimal reduction in battery charger capacity, and a complete disconnected/de-energized DC subsystem. Even with the small reduction in the capacity, the battery charger may still support any post-accident assumed functions. This change applies a less restrictive restoration time, while: a) increasing the technical focus on remaining battery capabilities; b) continuing to require full charger OPERABILITY requirements that are based on the margin as designed in the design basis capacity of the battery charger and consistent with the current basis for charger OPERABILITY; and c) maintaining the 2 hour restoration time for a de-energized DC distribution subsystem.

The proposed ACTION A for LCO 3.8.4 provides a 7 day restoration time for an inoperable Division 1 or 2 battery charger. However, this time limit is contingent on meeting requirements that specify a tiered approach to assuring battery capability is maintained. If the battery charger is identified to be inoperable, the first priority is to minimize the battery discharge, which will be required to be terminated within 2 hours (Required Action A.1). This will also require action to ensure that a battery charging source is applied within the 2 hour period. Presuming that the battery discharge (if occurring) can be terminated and that the DC bus remains energized (as required by a separate LCO), there is reasonable basis for extending the restoration time for an inoperable charger beyond the 2 hour limit. The second tiered action proposes 12 hours to establish that the battery has sufficient capacity to perform its assumed duty cycle as measured by float current $\leq$2 amps (which may involve some recharging of lost capacity that occurred during the initial 2 hours). A plant shutdown as currently required versus a proposed 12 hour battery capacity determination followed by a 7 day restoration period is an acceptable change based on the following technical analysis.

This license amendment request (LAR) revises River Bend TS 3.8.4 to provide specific Actions and increased restoration time for an inoperable Division 1 or 2 battery charger. The

existing TS 3.8.4 Action A, B, and C are renumbered as Action B, C, and D, respectively, and a new Action A is added to address inoperable battery chargers for Division 1 and 2.

The new actions are summarized as follows:

a) Ensuring that a battery charging source is applied to the battery within 2 hours (Action A.1: Restore battery terminal voltage to greater than or equal to the minimum established float voltage);
b) Ensuring that the battery is fully recharged within 12 hours (Action A.2: Verify battery float current $\leq$2 amps every 12 hours thereafter);
c) Restoring the battery charger to operable status within 7 days (Action A.3)

Technical Specification Bases markups for TS Bases 3.8.4 are provided in Attachment 3 for information only.

3.0 BACKGROUND

RBS is provided with three independent Class 1E 125 VDC electrical power subsystems, Division 1, 2, and 3. The DC electrical power distribution system provides the AC emergency power distribution system with control power. It also provides both motive and control power to selected safety related equipment. The system is described in USAR section 8.3.2. Division 1 battery supplies Engineered Safeguards Feature (ESF) Division 1 load requirements and Division 2 Battery bus supplies ESF Division 2 load requirements. The Division 3 safety related DC bus provides power to ESF Division 3 load requirements. They are electrically isolated and physically separated so that any failure involving one division cannot jeopardize the function of another division.

The Class 1E 125 VDC battery systems supply power to Class 1E loads without interruption during normal operations or DBA conditions. Each Class 1E 125 VDC system consists of one battery, one main distribution bus, one static battery charger, and local distribution panels. Redundancy and independence of components precludes the loss of both systems as a result of a single failure. There is no sharing between redundant Class 1E trains of equipment such as batteries, battery chargers, or distribution panels.

Each Class 1E 125 VDC charger system has the capacity to continuously supply the normally connected running loads while maintaining its respective battery in a fully charged condition. Each battery was sized based upon supplying the design duty cycle in the event of loss of offsite AC power concurrent with a LOCA and a single failure of a diesel generator.

The primary sources of Class 1E DC power systems are the battery chargers. Each battery charger is capable of floating the battery on the bus or recharging a completely discharged battery while supplying the largest combined demands of the various steady state loads under all plant operating conditions. Each battery charger is fed from a 480-volt alternating current (VAC) ESF switchgear bus of the same division.

Each safety-related DC system has a battery charger which is sized to supply all normal continuous steady-state loads and to restore simultaneously a battery from its end of duty cycle condition to the fully charged condition in 24 hr and maintain it in a fully charged

condition. The battery chargers have an equalizing charge voltage of 139 V nominal. The stability of the battery charger output is not load dependent. Each battery system is sized in conformance with principles set out in IEEE-308 and IEEE-485. Battery capacities for Divisions 1 and 2 are 2100 or 2150 AH each. Standby batteries for Division 1 and 2 have the ability to supply all DBA loads and all other loads not automatically tripped on a LOCA signal for 4 hours and have sufficient capacity remaining to perform the switching operations.

A separate backup battery charger procured and qualified to IEEE-323 requirements and powered from either a nonsafety-related (black) power source or a portable diesel generator is provided as a backup battery charger for the Division 1, 2 and 3 safety related and three of the nonsafety-related battery chargers. (Refer to USAR Figure 8.3-6) The backup battery charger's rating is equal to the largest capacity battery charger which it must replace. When the backup battery charger is to be used, the breaker of the battery charger being removed from service is relocated to the backup charger position. The backup charger breaker is taken from its storage position and placed in the position on its bus which feeds the bus of the battery charger removed from service. Manual closing of the two charger breakers completes the charging circuit. The backup battery charger breaker's position is monitored in the main control room, and is tripped upon receipt of a LOCA signal.

Operation of the backup battery charger is under strict administrative control. No credit was taken for this charger in mitigating the consequences of an accident.

Where there is an electrical interface between safety-related switchgear and nonsafety-related equipment, such as chargers and switchgear, automatic breaker tripping by a LOCA signal at the safety-related switchgear is provided.

4.0 TECHNICAL ANALYSIS

Current TS Actions for an inoperable battery charger are the same for an inoperable battery or a completely de-energized DC distribution system, which require restoration of the battery charger operability within 2 hours.

New Actions with their associated restoration times would be added to Specification 3.8.4 to address Division 1 and 2 battery charger inoperability. Each of the Actions address the condition where the battery charger becomes inoperable. While the proposed Action A provides a 7 day restoration time for an inoperable battery charger on one division, this time is contingent on meeting the requirements that specify a tiered approach to assuring battery capability is maintained.

If the safety related battery charger is identified to be inoperable, the first priority is to minimize the battery discharge and apply a battery charging source. Action A.1 assures the discharge is terminated by requiring that the battery terminal voltage be restored to greater than or equal to the minimum established float voltage within 2 hours.

The second tier action (Action A.2) requires that within 12 hours (and continuing at twelve hour intervals) the verification is made that the battery has sufficient capacity to perform its assumed duty cycle. The 12 hours is provided since there may involve some recharging of lost capacity that occurred during the initial 2 hours. This provides a reasonable time to fully

recharge the battery. (Note: Specification 3.8.6 "Battery Cell Parameters", Footnote (c) in Table 3.8.6-1 currently provides that battery charging current of < 2 amps when on float charge is acceptable for meeting specific gravity limits following a battery recharge, for a maximum of 31 days.)

To support this request for new Actions and increased Completion Time for an inoperable battery charger, Entergy plans to utilize the non-class 1E backup battery charger, as described in the Background section above, to maintain the associated battery fully charged during non-accident conditions. This non-class 1E battery charger is the same model and has the same ratings as the installed Division 1 and 2 class 1E battery chargers (i.e., same input loading and 300 ampere current capability), and was purchased to Class 1E requirements. In addition, the backup battery charger can be powered from an onsite power source (Station Blackout (SBO) diesel generator) should it be required. These actions are controlled by Station procedures, AOP-0050 "Station Blackout", and SOP-0054 "Station Blackout Diesel Generator".

The backup battery charger, BYS-CHGR1D, and Station Blackout Diesel, are periodically tested and maintained under the Station's Preventive Maintenance program. In addition, during scheduled surveillance testing of the Division 3 battery charger, the backup charger BYS-CHGR1D, is placed in service which verifies the functionality on the backup charger on the same frequency.

The SBO diesel is presently included within the scope of 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants" at RBS. The backup battery charger is also contained within this program with a Maintenance Rule function of providing backup power to Technical Support Center computers. Entergy will appropriately include in this program the backup battery charger function associated with supporting this proposed TS change.

The risk associated with running the 125 VDC system, with the backup non-class 1E charger aligned to each of the chargers (Division 1 and 2) with the SBO diesel generator backup was evaluated using the River Bend Probabilistic Safety Assessment. The risk of continued operation was compared with the risk associated with plant shutdown with the relevant charger out of service. The results showed that the risk of continued operation, with one division's safety related charger out of service for 7 days, was significantly less than the risk associated with plant shutdown to repair the charger and restart the plant.

Therefore, there is reasonable basis for extending the restoration time for an inoperable battery charger to 7 days assuming that:

- The DC bus remains energized (as required by Specification 3.8.4),
- The battery discharge (if occurring) is terminated (Action A.1). Maintaining the battery charged using the backup charger to restore terminal voltage meets this assumption. The SBO diesel is available should it be needed.
  And,
- The battery is operable and fully recharged within 12 hours (Action A.2)

The revised Actions are acceptable because they focus efforts on retaining battery capabilities, retaining the requirements for charger operability, and apply a reasonable restoration time for an inoperable battery charger to avoid an unnecessary plant shutdown.

5.0 REGULATORY ANALYSIS

5.1 Applicable Regulatory Requirements/Criteria

The proposed changes have been evaluated to determine whether applicable regulations and requirements continue to be met. This amendment will result in changes to the RBS compliance with Regulatory Guide 1.93, in that inoperable battery chargers will be justified for up to a 7 day restoration time. The increased restoration times and revised criteria for monitoring the capacity of the battery and battery chargers to perform their intended function, are reasonable and consistent with approved standards, guidance and regulations.

Entergy has determined that the proposed changes do not require any exemptions or relief from regulatory requirements, other than the TS, and do not affect conformance with any General Design Criterion (GDC) differently than described in the Updated Final Safety Analysis Report (UFSAR.)

5.2 No Significant Hazards Consideration

New Actions with their associated restoration times are added to Specification 3.8.4 to address battery charger inoperability. Each of the Actions addresses the condition where the battery charger becomes inoperable. The proposed Action A provides a 7 day restoration time for an inoperable battery charger on one division, and provides a tiered approach to assuring battery capability is maintained.

Entergy Operations, Inc. has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

   Response: No.

   The class 1E direct current (DC) electrical power system including the associated battery chargers are not initiators to any accident sequence analyzed in the Updated Safety Analysis Report (USAR). Operation in accordance with the proposed Technical Specification (TS) ensures that the DC system is capable of performing its function as described in the USAR. While power to the non class 1E charger will be lost after a Design Basis Accident (DBA), the Division 1 and 2 batteries have the ability to supply all DBA loads and all other standby loads not automatically tripped on a LOCA signal for 4 hours and have sufficient capacity to restore normal AC and DC power with the charger inoperable. The actions required to restore the power to the non-Class 1E charger are included in procedures for Station Blackout requiring the use of a non

class 1E diesel generator. They allow the impacted DC battery and DC bus to be restored to perform its required function as described in the USAR.

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

2. 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 do not involve a physical change to the plant. No new equipment is being introduced, and installed equipment is not being operated in a new or different manner. There are no setpoints, at which protective or mitigative actions are initiated, affected by this change. These changes will not alter the manner in which equipment operation is initiated, nor will the function demands on credited equipment be changed. Any alterations in procedures will continue to assure that the plant remains within analyzed limits, and no change is being made to the procedures relied upon to respond to an off normal event as described in the USAR. As such, no new failures modes are being introduced.

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

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The margin of safety is established through equipment design, operating parameters, and the setpoints at which automatic actions are initiated. The proposed changes are acceptable because the operability of the safety related DC systems are unaffected and there is no detrimental impact on any equipment design parameter. The plant will still be capable of operating within assumed conditions. Operations in accordance with the proposed TS ensures that the DC system is capable of performing its function as described in the USAR; therefore, the support of the DC system to the plant response to analyzed events will continue to provide the margins of safety assumed by the analysis. In addition, the DC system is within the scope of 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," which will ensure the control of maintenance activities associated with the DC system. This provides sufficient management control of the requirements that assure the batteries are maintained in a highly reliable condition. The non-class 1E battery charger is the same model and has the same ratings as the installed Division 1 and 2 class 1E battery chargers (i.e., same input loading and ampere current capability), and was purchased to Class 1E requirements. In addition, the backup battery charger can be powered from an onsite power source (Station Blackout (SBO) diesel generator) should it be required.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Entergy concludes that the proposed amendment(s) present no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.3 Environmental 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 effluent that may be released offsite, or (iii) a significant increase in individual or cumulative 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 impact statement or environmental assessment need be prepared in connection with the proposed amendment.

Attachment 2

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Proposed Technical Specification Changes (mark-up)

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources–Operating

LCO 3.8.4 The Division I, Division II, and Division III DC electrical power subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

INSERT A

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B A. Division I or II DC electrical power subsystem inoperable for reasons other than Condition A	B A.1 Restore Division I and II DC electrical power subsystems to OPERABLE status.	2 hours
C B. Division III DC electrical power subsystem inoperable.	C B.1 Declare High Pressure Core Spray System and Standby Service Water System pump 2C inoperable.	Immediately
D C. Required Action and associated Completion Time not met.	D C.1 Be in MODE 3. AND D C.2 Be in MODE 4.	12 hours 36 hours

Insert A

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required battery charger on Division 1 or 2 inoperable.	A.1 Restore battery terminal voltage to greater than or equal to the minimum established float voltage.	2 hours
	AND	
	A.2 Verify battery float current ≤ 2 amps.	Once per 12 hours
	AND	
	A.3 Restore battery charger to OPERABLE status.	7 days

Attachment 3

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Changes to Technical Specification Bases Pages
For Information Only

BASES

BACKGROUND (continued)

The Division III battery has adequate storage to carry the required load continuously for at least 2 hours (Ref. 4).

Each DC battery subsystem is separately housed in a ventilated room apart from its charger and distribution centers. Each subsystem is located in an area separated physically and electrically from the other subsystems to ensure that a single failure in one subsystem does not cause a failure in a redundant subsystem. There is no sharing between redundant Class 1E subsystems such as batteries, battery chargers, or distribution panels.

The batteries for a DC electrical power subsystem are sized to produce required capacity at 80% of nameplate rating while maintaining system voltage.

Each battery charger of Division I and II DC electrical power subsystems has ample power output capacity for the steady state operation of connected loads required during normal operation, while at the same time maintaining its battery bank fully charged. Each battery charger has sufficient capacity to restore the battery bank from the design minimum charge to its fully charged state within 24 hours while supplying normal steady state loads (Ref. 4).

excess

The battery charger of Division III DC electrical power subsystem has sufficient capacity to restore the battery bank from the design minimum charge to its fully charged state in 8 hours while supplying normal steady state loads (Ref. 4).

INSERT B1

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the USAR, Chapter 6 (Ref. 5) and Chapter 15 (Ref. 6), assume that ESF systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the DGs, emergency auxiliaries, and control and switching during all MODES of operation.

The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining DC sources OPERABLE during accident conditions in the event of:

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

a. An assumed loss of all offsite AC power or of all onsite AC power; and

b. A worst case single failure.

The DC sources satisfy Criterion 3 of the NRC Policy Statement.

LCO

The DC electrical power subsystems, each subsystem consisting of one battery, one battery charger, and the corresponding control equipment and interconnecting cabling supplying power to the associated bus within the divisions, are required to be OPERABLE to ensure the availability of the required power to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. Loss of any DC electrical power subsystem does not prevent the minimum safety function from being performed (Ref. 4).

APPLICABILITY

The DC electrical power sources are required to be OPERABLE in MODES 1, 2, and 3 to ensure safe unit operation and to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

b. Adequate core cooling is provided, and containment integrity and other vital functions are maintained in the event of a postulated DBA.

INSERT B2

The DC electrical power requirements for MODES 4 and 5 are addressed in the Bases for LCO 3.8.5, "DC Sources–Shutdown."

ACTIONS

B ~~A~~.1

B

Condition ~~A~~ represents one division with a loss of ability to completely respond to an event, and a potential loss of ability to remain energized during normal operation. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete

(continued)

BASES

ACTIONS B A.1 (continued)

loss of DC power to the affected division. The 2 hour limit is consistent with the allowed time for an inoperable DC distribution system division.

for reasons other than Condition A

If one of the required Division I or II DC electrical power subsystems is inoperable (e.g., inoperable battery ~~or inoperable battery charger~~ or inoperable battery charger and associated inoperable battery), the remaining DC electrical power subsystems have the capacity to support a safe shutdown and to mitigate an accident condition. Since a subsequent worst case single failure could, however, result in the loss of minimum necessary DC electrical subsystems, continued power operation should not exceed 2 hours. The 2 hour Completion Time is based on Regulatory Guide 1.93 (Ref. 7) and reflects a reasonable time to assess unit status as a function of the inoperable DC electrical power subsystem and, if the DC electrical power subsystem is not restored to OPERABLE status, to prepare to effect an orderly and safe unit shutdown.

C B.1

With the Division III DC electrical power subsystem inoperable, the HPCS and Standby Service Water System pump 2C may be incapable of performing their intended functions and must be immediately declared inoperable. This declaration also requires entry into applicable Conditions and Required Actions of LCO 3.5.1, "ECCS – Operating," and LCO 3.7.1, "Standby Service Water (SSW) System and Ultimate Heat Sink (UHS)."

D C.1 and C.2 (D) inoperable

If the DC electrical power subsystem cannot be restored to OPERABLE status within the associated Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant

(continued)

BASES

ACTIONS D C.1 and D C.2 (continued)

conditions from full power conditions in an orderly manner and without challenging plant systems. The Completion Time to bring the unit to MODE 4 is consistent with the time required in Regulatory Guide 1.93 (Ref. 7).

SURVEILLANCE REQUIREMENTS

SR 3.8.4.1

Verifying battery terminal voltage while on float charge helps to ensure the effectiveness of the charging system and the ability of the batteries to perform their intended function. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery (or battery cell) and maintain the battery (or battery cell) in a fully charged state. The voltage requirements are based on the nominal design voltage of the battery and are consistent with the initial voltages assumed in the battery sizing calculations. The 7 day Frequency is consistent with manufacturer's recommendations and IEEE-450 (Ref. 8).

SR 3.8.4.2

Visual inspection to detect corrosion of the battery cells and connections, or measurement of the resistance of each inter-cell, inter-rack, inter-tier, and terminal connection, provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance. Only those terminals and connectors which have visible corrosion must be measured for connection resistance.

The Surveillance Frequency for these inspections, which can detect conditions that can cause power losses due to resistance heating, is 92 days. This Frequency is considered acceptable based on operating experience related to detecting corrosion trends.

SR 3.8.4.3

Visual inspection of the battery cells, cell plates, and battery racks provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance.

(continued)

INSERT B1

The battery charger is normally in the float-charge mode. Float-charge is the condition in which the charger is supplying the connected loads and the battery cells are receiving adequate current to optimally charge the battery. This assures the internal losses of the battery are overcome and the battery is maintained in a fully charged state.

When desired, the charger can be placed in the equalize mode. The equalize mode is at a higher voltage than the float mode and charging current is correspondingly higher. The battery charger is operated in the equalize mode after a battery discharge or for routine maintenance. Following a battery discharge, the battery recharge characteristic accepts current at the current limit of the battery charger (if the discharge was significant, e.g., following a battery service test) until the battery terminal voltage approaches the charger voltage setpoint. Charging current then reduces exponentially during the remainder of the recharge cycle. Lead-calcium batteries have recharge efficiencies of greater than 95%, so once at least 105% of the ampere-hours discharged have returned, the battery capacity would be restored to the same as it was prior to the discharge. This can be monitored by direct observation of the exponentially decaying charging current or by evaluating the amp-hours discharged from the battery and amp-hours returned to the battery.

INSERT B2

ACTIONS A.1, A.2, and A.3

Condition A represents one division with one battery charger inoperable (e.g., the voltage limit of SR 3.8.4.1 is not maintained). The ACTIONS provide a tiered response that focuses on returning the battery to the fully charged state restoring a fully qualified charger to the OPERABLE status in a reasonable time period. Required Action A.1 requires that the battery terminal voltage be restored to greater than or equal to the minimum established float voltage within 2 hours. This time provides for returning the inoperable charger to OPERABLE status or providing an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage. Restoring the battery terminal voltage to greater than or equal to the minimum established float voltage provides good assurance that, within 12 hours, the battery will be restored to its fully charged condition (Required Action A.2) from any discharge that might have occurred due to the charger inoperability. A discharged battery having terminal voltage of at least the minimum established float voltage indicates that the battery is on the exponential charging portion (the second part) of its recharge cycle. The time to return a battery to its fully charged state under this condition is simply a function of the amount of the previous discharge and the recharge characteristic of the battery. Thus there is good assurance of fully recharging the battery within 12 hours, avoiding a premature shutdown with its own attendant risk.

If established battery terminal float voltage cannot be restored to greater than or equal to the minimum established float voltage within the 2 hours, and the charger is not operating in the current-limiting mode, a faulty charger is indicated. A faulty charger that is incapable of maintaining established battery terminal float voltage does not provide assurance that it can revert to and operate properly in the current limit mode that is necessary during the recovery period following a battery discharge event that the DC system is designed for.

If the charger is operating in the current limit mode after 2 hours that is an indication that the battery is partially discharged and its capacity margins will be reduced. The time to return the battery to its fully charged condition in this case is a function of the battery charger capacity, the amount of loads on the associated DC system, the amount of the previous discharge, and the recharge characteristic of the battery. The charge time can be extensive, and there is not adequate assurance that it can be recharged within 12 hours (Required Action A.2).

Required Action A.2 requires that the battery float current be verified as less than or equal to 2 amps. This indicates that, if the battery had been discharged as a result of the inoperable battery charger, it has now been fully recharged. If at the expiration of the initial 12 hour period the battery float current is not less than or equal to 2 amps this indicates there may be additional battery problems and the battery must be declared inoperable.

Required Action A.3 limits the restoration time for the inoperable battery charger to 7 days. This action is applicable if the balance of plant non-Class 1E battery charger and Station Blackout (SBO) diesel are available, during the completion time duration, as an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage. The 7 day completion time reflects a reasonable time to effect restoration of the qualified battery charger to operable status.

Attachment 4

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List of Regulatory Commitments

List of Regulatory Commitments

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE (If Required)
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
The SBO diesel is presently included within the scope of 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants" at RBS. The backup battery charger is also contained within this program with a Maintenance Rule function of providing backup power to Technical Support Center computers. Entergy will appropriately include in this program the backup battery charger function associated with supporting this proposed TS change.		x	**Prior to implementation of change**